SHB211 Series
Intel® Core™ 2 Duo/Celeron® M CPU
PICMG 1.3 Half-Size
Single Board Computer
User's Manual

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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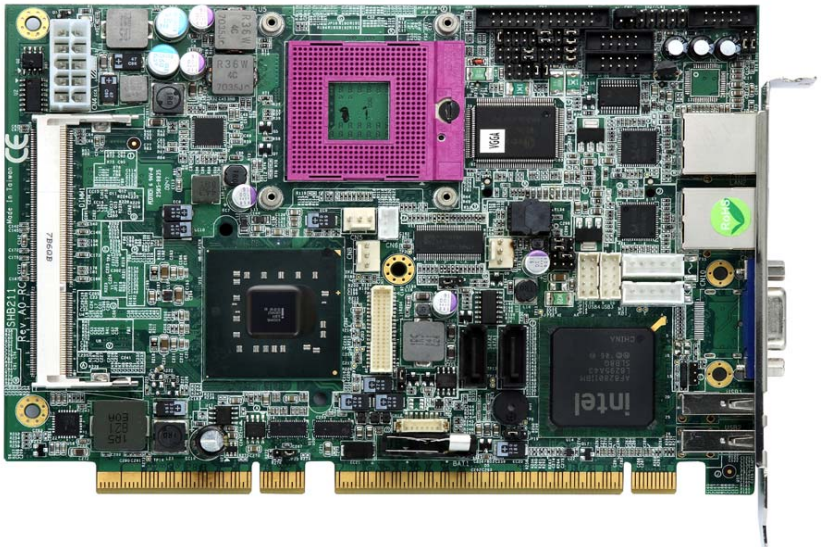
Table of Contents

Disclaimers ..... **ii**
ESD Precautions ..... **iii**
CHAPTER 1 INTRODUCTION **1**
1.1 Specifications 2
1.2 Utilities Supported 4
1.3 Block Diagram 5
1.4 I/O Bracket 6
CHAPTER 2 JUMPERS AND CONNECTORS **7**
2.1 Board Dimensions 7
2.2 Board Layout 8
2.3 Jumper Settings 10
2.3.1 COM1 Mode Select Jumpers (JP1, JP2, JP3) 11
2.3.2 Audio Output Selection Jumper (JP4) 11
2.3.3 COM1~2 Mode Selection Jumpers (JP6, JP5) 12
2.3.4 CompactFlash™ Device Setting Jumper (JP8~11) 14
2.3.5 ComplactFlash™ Voltage Selection Jumper (JP12) 14
2.3.6 Auto-Power Button Selection Jumper (JP13) 14
2.3.7 USB Voltage Selection Jumpers (JP14, JP15, JP17) 15
2.3.8 LVDS Voltage Selection Jumper (JP18) 15
2.3.9 CMOS Clear Jumper (JP19) 16
2.3.10 NB PCIex16 Signal Mode Jumper (JP20-21) 16
2.4 Connectors 17
2.4.1 Audio Connector (CN1) 19
2.4.2 Front Panel Connector (CN2) 19
2.4.3 Print Port or Floppy Connectors (CN3) 21
2.4.4 EPIC Power Connector (CN4) 22
2.4.5 CPU & System Fan Connectors (CN5, CN7, CN8) 23
2.4.6 SMBUS Connector (CN6) 23
2.4.7 Display Port Connector (SHB211PGGA, CN9) 24
2.4.8 VGA Connector (SHB211VGGA, CN10) 25
2.4.9 JST Connector for LVDS Flat Panel (CN11) 25
2.4.10 LVDS Backlight Connector (CN12) 26
2.4.11 External Mouse/Keyboard Connectors (MS1/KB1) 27
2.4.12 Ethernet RJ-45 Connectors (LAN1/LAN2) 27
2.4.13 Serial Port Interface (COM1, COM2) 28
2.4.14 SATA Connectors (SATA1, SATA2) 28
2.4.15 USB Connectors (USB1, USB2) 29
2.4.16 USB Connectors (USB3/USB4) 29
2.4.17 USB Connectors (USB5/USB6) 30
2.4.18 CompactFlash™ Socket (SCF1) 30
CHAPTER 3 HAREDWARE INSTALLATION **32**
3.1 Installing the Processor 32
3.2 Installing the Memory 35

CHAPTER 4 HARDWARE DESCRIPTION 36
4.1 Microprocessors 36
4.2 BIOS 36
4.3 System Memory 36
4.4 I/O Port Address Map 37
4.5 Interrupt Controller (IRQ) Map 39
CHAPTER 5 AMI BIOS SETUP UTILITY 40
5.1 Starting 40
5.2 Navigation Keys 40
5.3 Main Menu 41
5.4 Advanced Menu 42
5.5 PCI PnP Menu 58
5.6 Boot Menu 60
5.7 Security Menu 62
5.8 Chipset Menu 64
5.9 Exit Menu 67
CHPATER 6 INSTALLATION OF DRIVERS 70
6.1 Installing Chipset Driver 70
6.2 Installing AUDIO Driver 74
6.3 Installing VGA Driver 76
6.4 Installing LAN Driver 80
APPENDIX A WATCHDOG TIMER 84
Watchdog Timer Setting 84
Using the Watchdog Function 84
APPENDIX B PICMG v1.3 INTERFACE DEFINITION 86
APPENDIX C CONFIGURING SATA FOR RAID FUNCTION 91

MEMO

CHAPTER 1 INTRODUCTION



The **SHB211** PICMG 1.3 half-size Single Board Computer supports Socket P (478-pin) for Intel® Core™ 2 Duo/Celeron® M processors with FSB 800/1066 MHz MT/s. The board integrates Intel® GM45 and ICH9M/ICH9M-E chipsets that can deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 204-pin DDR3 SODIMM sockets for dual channel DDR3 800/1066, maximum memory capacity up to 8GB. The board also features dual Gigabit Ethernet, two serial ATA ports at maximum transfer rate up to 3Gbs, and RAID 0,1,5,10 (optional with ICH9M-E). Six USB 2.0 high speed compliant ports and built-in Intel® HD Audio Digital Header can achieve the best stability and reliability for industrial applications.

1.1 Specifications

- **CPU**
  - **Intel® Core™ 2 Duo/Celeron® M Processors**
- **System Chipset**
  - **Intel® GM45 and ICH9M (**optional with ICH9M-E)
- **CPU Socket**
  - **Socket P (478-pin)**
- **Front-Side Bus**
  - **800/1066 MHz**
- **BIOS**
  - AMI BIOS via SPI interface with socket
- **System Memory**
  - Two 204-pin DDR3 SO-DIMM sockets
  - Maximum up to 8GB DDR3 memory
  - Supports DDR3 800/1066 memory
- **L2 Cache:** integrated in CPU
- **Onboard Multi-I/O**
  - Parallel Port: one 26-pin 2.0 pitch box-header for shared FDD/LPT
  - Serial Port: one for RS-232/422/485 (COM1) and one port for RS-232 (COM2)
  - Two Serial ATA-2 ports
- **USB Interface**
  - Six USB ports compliant with USB Spec. Rev. 2.0 (two on the rear I/O, and four ports via wafer connectors)
- **Expansion Interface**
  - PCIe x16 for discrete graphic card or PCIe x1 deivces
  - PCIe x4 for one PCIe x4 or four PCIe x1 I/O Deivces
  - LPC interface
- **SSD**
  - CompactFlash™ Type-II Socket via jMicron JM20330 SATA-to-PATA controller

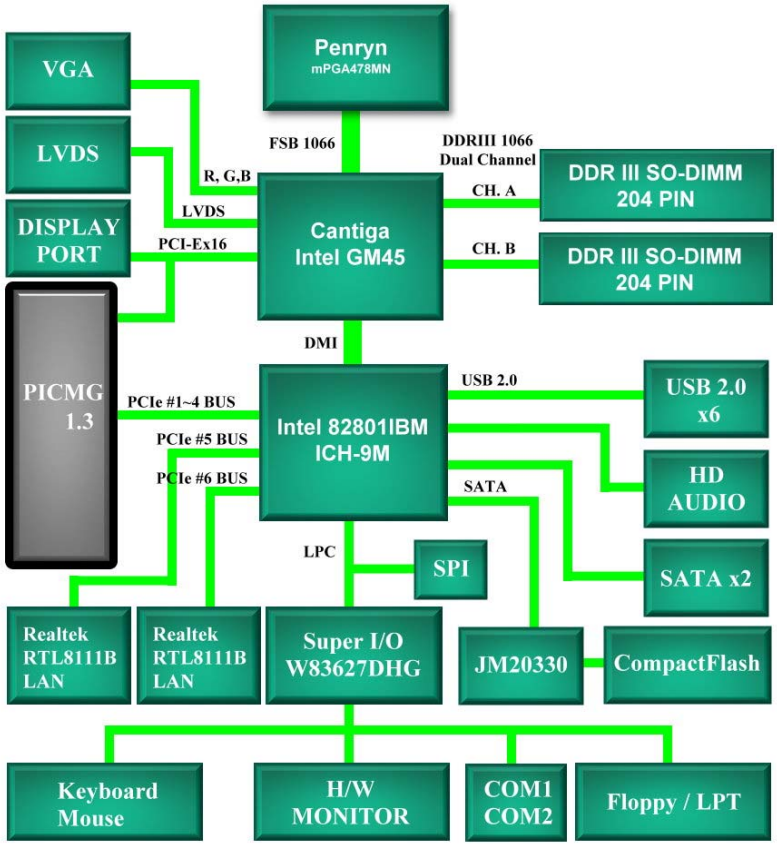
- **VGA Controller**
  - Chipset -- Intel® GM45 GMCH Gen5 integrated graphic engine; support Microsoft DirectX 10, Blu-ray 40Mb/s
  - Memory Size up to 256MB frame buffer sharing system memory
  - Maximum Resolution –
    - CRT – 2048 x 1536 @ 75Hz with 32-bit color
    - LVDS LCD – 4:3 up to UXGA 1600 x 1200
    - Digital DisplayPort – 2048 x 1536
  - Output Interface --
    - CRT connector for DAC output
    - DisplayPort connector (co-location with CRT D-Sub 15-pin connector as an option)
    - LVDS LCD with single/dual channel 18/24-bit mode
- **Ethernet**
  - Dual Gigabit Ethernet; 2 x RTL8111B
- **Serial ATA**
  - Support Serial ATA/Serial ATA II
  - Two Serial ATA-II ports, 3Gb/s performance and RAID 0,1,5,10 (optional with ICH9M-E)
- **Audio**
  - Intel® HD Audio Digital Header
- **Hardware Monitoring**
  - Support CPU/System temperature, CPU/System voltage, and CPU/System Smart Fan features
- **Watchdog Timer**
  - Reset Supported (1-255 level)
- **Dimensions**
  - 185mm x 126mm

NOTE *All specifications and images are subject to change without notice.*

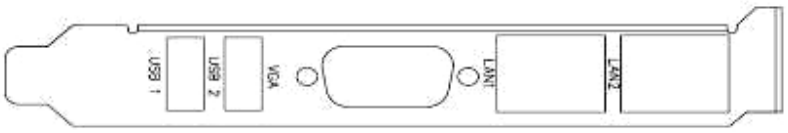
1.2 Utilities Supported

- Intel® GM45 Utility and Drivers
- VGA Drivers
- Ethernet Utility and Drivers
- RAID Utility

1.3 Block Diagram

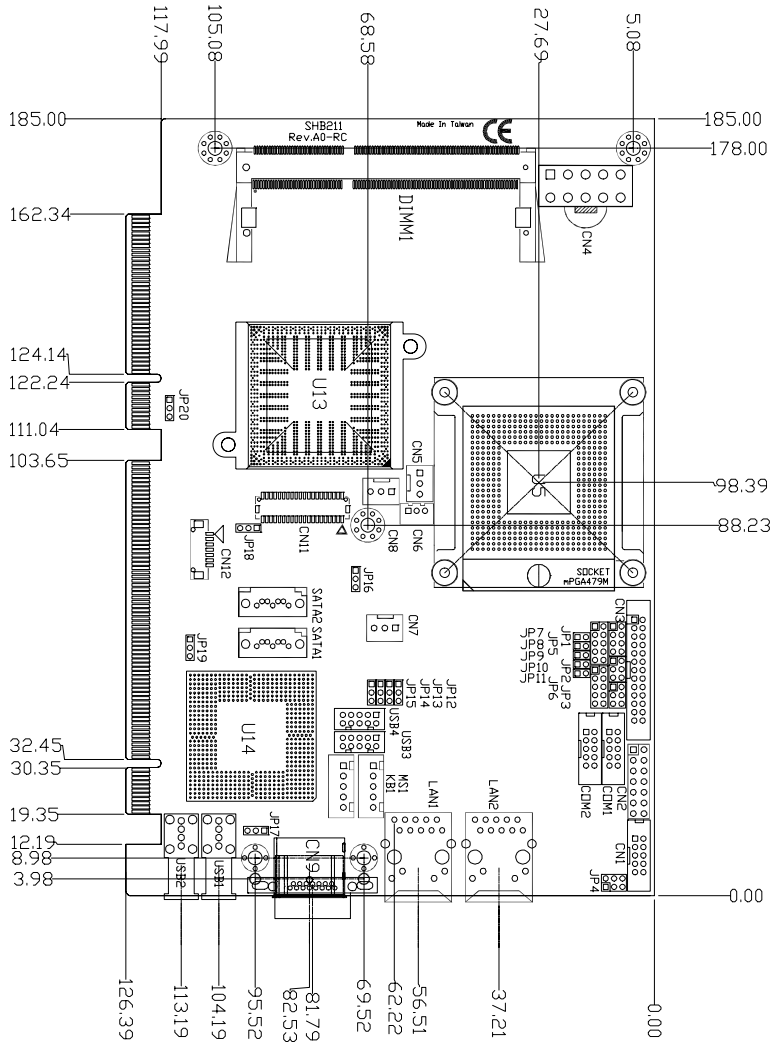


1.4 I/O Bracket

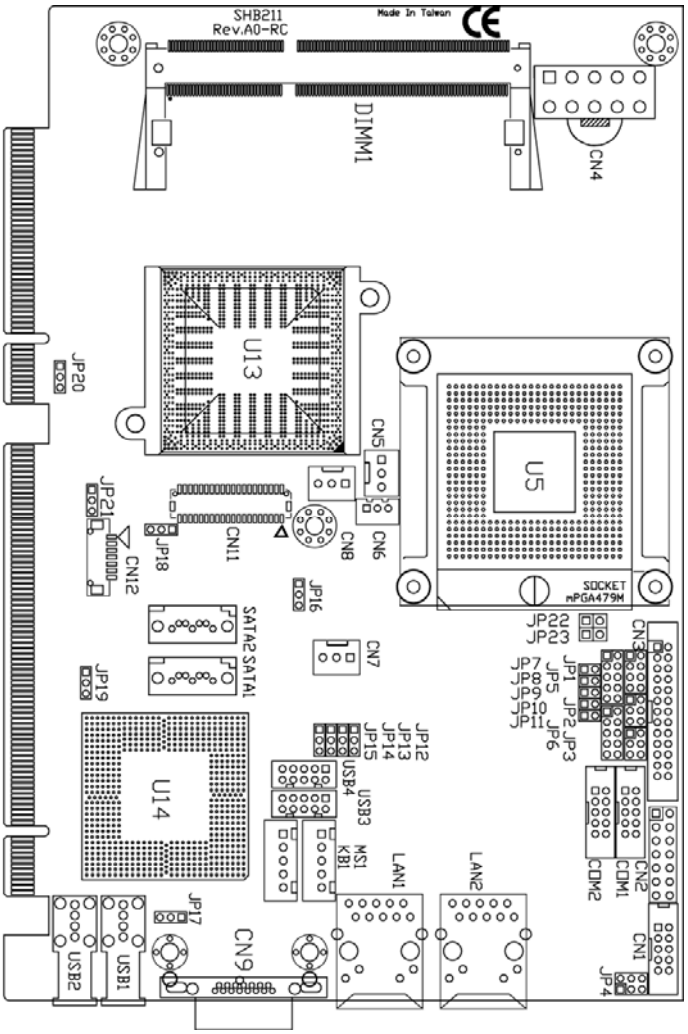


CHAPTER 2 JUMPERS AND CONNECTORS

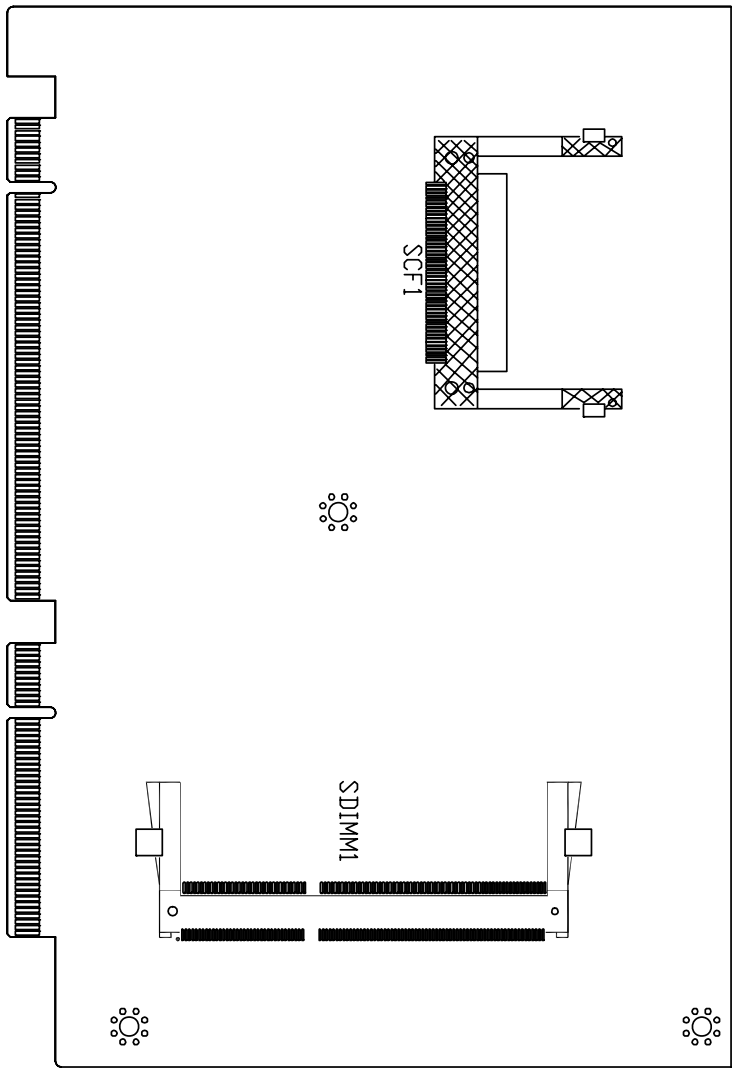
2.1 Board Dimensions



2.2 Board Layout



Component Side



Solder Side

2.3 Jumper Settings

Proper jumper settings configure the **SHB211** to meet your application purpose.

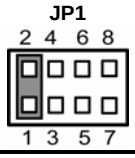
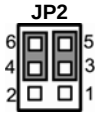
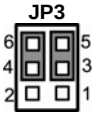
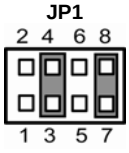
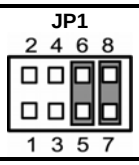
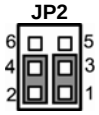
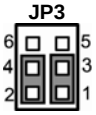
Jumper	Default Setting		Jumper Setting
JP1	COM1 Mode Selection Default: RS-232		Short 1-2
JP2	COM1 Mode Selection Default: RS-232		Short 3-5, 4-6
JP3	COM1 Mode Selection Default: RS-232		Short 3-5, 4-6
JP4	Audio Speak Out/Line Out Selection Default: Line Out		Short 1-3, 2-4
JP5	COM2 Mode Select	COM2 Pin 1: DCD	Short 7-9
		COM2 Pin 8: RI	Short 8-10
JP6	COM1 Mode Select	COM1 Pin 1: DCD	Short 7-9
		COM1 Pin 8: RI	Short 8-10
JP8~11	CF Device Default: ON		Short 1-2
JP12	Compact Flash Voltage Selection Default: 3.3V		Short 1-2
JP13	Auto-Power Button Selection Default: Manual Power Button		Short 1-2
JP14	USB1,2 Voltage Selection Default: 5V		Short 1-2
JP15	USB3,4 Voltage Selection Default: 5V_SBY		Short 2-3
JP16	Digital Displayport only or concurrent with PCIE (SHB211 PGGA) Default: Digital Displayport concurrent with PCIE		Short 1-2
JP17	USB5,6 Voltage Selection Default: 5V_SBY		Short 2-3
JP18	LVDS Voltage Selection Default: 3.3V		Short 1-2
JP19	Normal Operation/Clear CMOS setting Default: Normal Operation		Short 1-2

Jumper	Default Setting	Jumper Setting
JP20~21	NB PCIEx16 Signal MODE Default: PCIEx16	Short 2-3

-- The End --

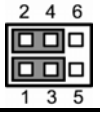
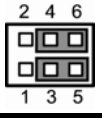
2.3.1 COM1 Mode Select Jumpers (JP1, JP2, JP3)

These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting		
COM1	RS-232 (Default)			
	RS-422			
	RS-485			

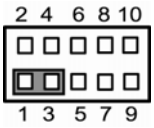
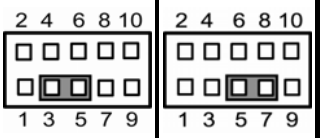
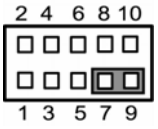
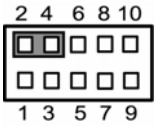
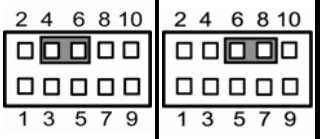
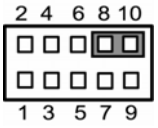
2.3.2 Audio Output Selection Jumper (JP4)

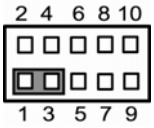
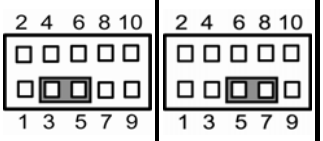
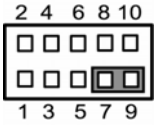
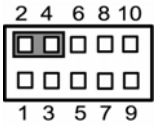
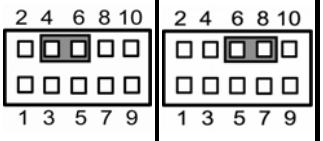
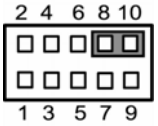
This jumper makes the selection of Audio output.

Description	Function	Jumper Setting
Audio Line Out/ Speaker Out	Line Out (Default)	
	Speak Out	

2.3.3 COM1~2 Mode Selection Jumpers (JP6, JP5)

These jumpers select the COM1, COM2 ports' DCD and RI mode.

Description	Function	Jumper Setting
COM1 DCD & RI Voltage Selection **(JP6)**	Pin 1=12V	
	Pin 1=5V	
	*Pin 1=DCD (Default)	
	Pin 8=12V	
	Pin 8=5V	
	*Pin 8=RI (Default)	

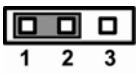
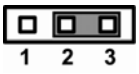
Description	Function	Jumper Setting
COM2 DCD & RI Voltage Selection **(JP5)**	Pin 1=12V	
	Pin 1=5V	
	*Pin 1=DCD (Default)	
	Pin 8=12V	
	Pin 8=5V	
	*Pin 8=RI (Default)	

2.3.4 CompactFlash™ Device Setting Jumper (JP8~11)

Jumper	Description	Jumper Setting	Description	Jumper Setting
CF Device	Enable (Default)		Disable	

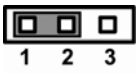
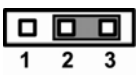
2.3.5 ComplactFlash™ Voltage Selection Jumper (JP12)

This jumper is to select the voltage for CompactFlash™ interface.

Description	Function	Jumper Setting
CompactFlash™ Voltage Selection	3.3V (Default)	
	5V	

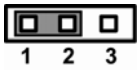
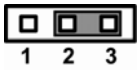
2.3.6 Auto-Power Button Selection Jumper (JP13)

Use this jumper to select either Auto or Manual power button.

Description	Function	Jumper Setting
Auto-Power Button Selection	Manual Power Buttom (Default)	
	Automatic Power Button	

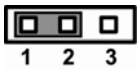
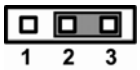
2.3.7 USB Voltage Selection Jumpers (JP14, JP15, JP17)

This jumper is to select the voltage for USB interface.

Description	Function	Jumper Setting
USB Voltage Selection	5V	
	5V_SBY	

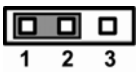
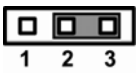
2.3.8 LVDS Voltage Selection Jumper (JP18)

This jumper is to select the voltage for LVDS interface.

Description	Function	Jumper Setting
LVDS Voltage Selection	3.3V (Default)	
	5V	

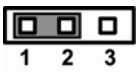
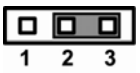
2.3.9 CMOS Clear Jumper (JP19)

You may need to use this jumper to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	
	Clear CMOS	

2.3.10 NB PCIex16 Signal Mode Jumper (JP20-21)

This jumper is to select singal output for PCIe x16 Slot or Digital Display Port.

Description	Function	Jumper Setting
North Bridge PCIEx16 Signal Mode	Display Port	
	PCIEx16 (Default)	

2.4 Connectors

Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

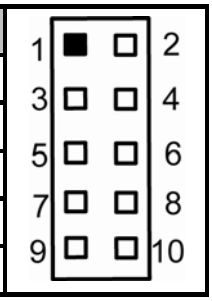
Here is a summary table shows you all connectors on the board.

Connectors	Label
Audio Connector	CN1
Front Panel Connector	CN2
FDD / PARALLEL Connector	CN3
EPIC Power Connector	CN4
CPU FAN Connector	CN5
SMBus Connector	CN6
SYSTEM FAN Connector	CN7
SYSTEM FAN Connector	CN8
Display Port Connector	CN9
VGA Connector	CN10
LVDS Connector	CN11
LVDS Backlight Connector	CN12
Keyboard Connector	KB1
Mouse Connector	MS1
Ethernet 1 Connector	LAN1
Ethernet 2 Connector	LAN2
Serial Port1 Connector	COM1
Serial Port2 Connector	COM2
SATA1 Connector	SATA1
SATA2 Connector	SATA2
USB1 Connector	USB1
USB2 Connector	USB2
USB3 / USB 4 Connector	USB3
USB5 / USB 6 Connector	USB4
CF Connector	SCF1
DDRIII RAM Connector	DIMM1
DDRIII RAM Connector	SDIMM1
Thermal Sensor Connector	JP22 , JP23

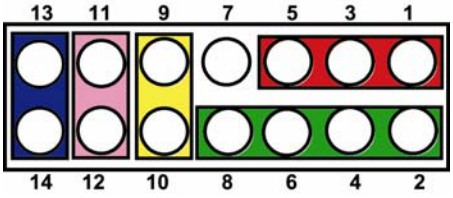
2.4.1 Audio Connector (CN1)

CN1 is a 10pin-header connector commonly used for the audio.

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



2.4.2 Front Panel Connector (CN2)



- **Power LED**

  This 3-pin connector denoted as Pin 1 and Pin 5 connects the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON. Pin 3 is defined as GND.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**

  This 2-pin connector denoted as Pin 9 and 10 connects the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**

  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.3 Print Port or Floppy Connectors (CN3)

Print Port Connector [Default]

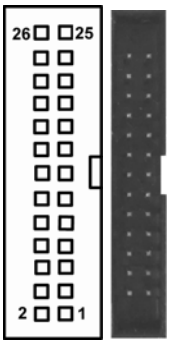
This board has a multi-mode parallel port to support:

1. Standard mode
IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port

2. Enhanced mode
Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)

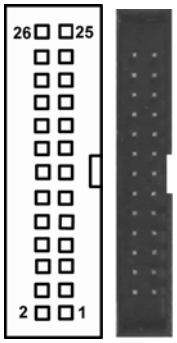
3. High speed mode
Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC



Floppy Connector [Optional]
You can plug one end of FDD cable in the FDD connector, and the other end of cable to the FDD drive. The supported type of FDD drives are 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB.

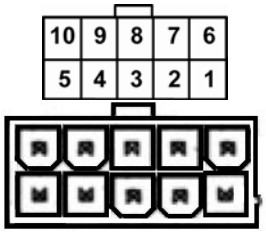
Pin	Signal	Pin	Signal
1	DRIVE0	2	NC
3	INDEX	4	NC
5	MOTOR ON	6	NC
7	DSKCHG	8	NC
9	DIR	10	GND
11	STEP	12	GND
13	WDATA	14	GND
15	WGATE	16	GND
17	TRK0	18	GND
19	WPT	20	GND
21	RDATA	22	GND
23	HDSEL	24	GND
25	DSKCHG	26	NC



The Parallel port and Floppy drive share the same connector so that you can select only one out of them. The parallel port is the default setting.

2.4.4 EPIC Power Connector (CN4)

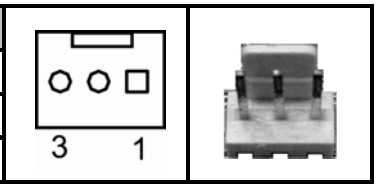
Pin	Signal	Pin	Signal
1	PSON#	6	5VSB
2	GND	7	+5V
3	GND	8	+5V
4	+12V	9	-12V
5	+3.3V	10	GND



2.4.5 CPU & System Fan Connectors (CN5, CN7, CN8)

CN5 is a fan connector for CPU, and **CN7**, **CN8** for system. Pentium microprocessors require a fan for heat dispensing. The CPU/System fan connectors respectively provide power to the CPU/System fans.

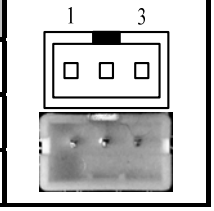
Pin	Signal
1	GND
2	+12V
3	Sensor



2.4.6 SMBUS Connector (CN6)

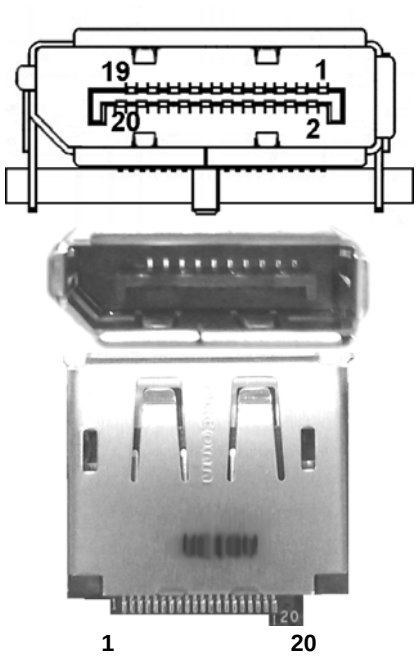
Connector CN5 is for SMBUS interface support.

Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.7 Display Port Connector (SHB211PGGA, CN9)

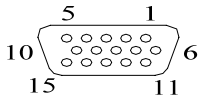
Pin	Signal
1	DPB_LANE0
2	GND
3	DPB_LANE0#
4	DPB_LANE1
5	GND
6	DPB_LANE1#
7	DPB_LANE2
8	GND
9	DPB_LANE2#
10	DPB_LANE3
11	GND
12	DPB_LANE3#
13	GND
14	GND
15	DPB_AUX
16	GND
17	DPB_AUX#
18	DPB_HPDE
19	N.C.
20	3.3V



2.4.8 VGA Connector (SHB211VGGA, CN10)

CN10 is a standard 15-pin pin DB15 connector commonly used for the CRT VGA display.

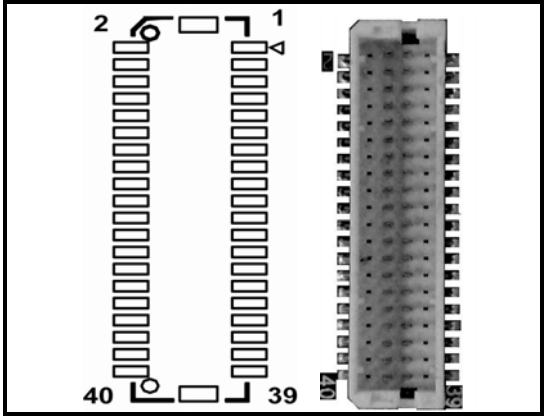
Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N/A	5	AGND	6	CRT_DET#
7	AGND	8	AGND	9	VGA_5V
10	AGND	11	N/A	12	DDC DAT
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK



2.4.9 JST Connector for LVDS Flat Panel (CN11)

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+

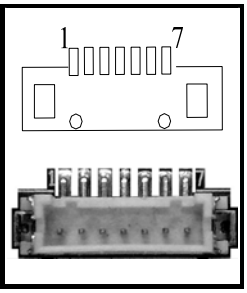
33	GND	34	GND
Pin	**Signal**	**Pin**	**Signal**
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



2.4.10 LVDS Backlight Connector (CN12)

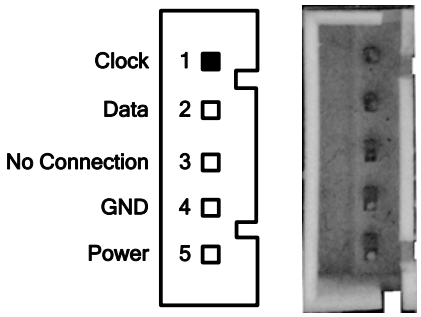
The 7-pin inverter connector on the SHB211 is with Hirose connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

Pin	Signal
1	12V
2	12V
3	5V
4	ENABLE
5	GND
6	GND
7	GND



2.4.11 External Mouse/Keyboard Connectors (MS1/KB1)

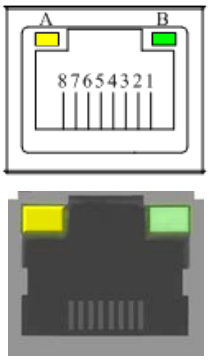
The board provides the Keyboard (KB1)/ Mouse (MS1) interface with a 5-pin connector.



2.4.12 Ethernet RJ-45 Connectors (LAN1/LAN2)

The RJ-45 connector LAN1/LAN2 is for Ethernet. To connect the board to 100-Base-T or 1000-Base-T hub, just plug one end of the cable into LAN1 or LAN2, and then, connect the other end (phone jack) to a 100-Base-T hub or 1000-Base-T hub.

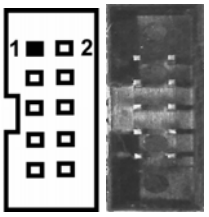
Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 100 base T-Only)
5	RJ-1(For 100 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 100 base T-Only)
8	RJ-1(For 100 base T-Only)
A	Active LED
B	100/1000 LAN LED



2.4.13 Serial Port Interface (COM1, COM2)

The serial interface for the board consists of COM1 port support RS232/422/485(COM1) and COM2 (COM2) supports RS-232.

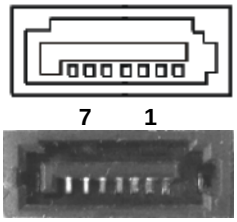
Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC



2.4.14 SATA Connectors (SATA1, SATA2)

These SATA connectors SATA1 and SATA2 are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal	Pin	Signal
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND		

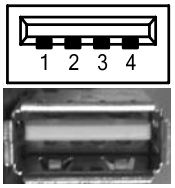


2.4.15 USB Connectors (USB1, USB2)

The **SHB211 Series** features Universal Serial Bus (USB) connectors, compliant with USB 2.0 (480Mbps) that can be adapted to any USB peripherals, such as monitor, keyboard and mouse.

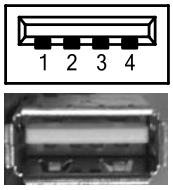
Pin	Signal
1	USB POWER
2	USB D1-
3	USB D1+
4	GND

USB1



Pin	Signal
1	USB POWER
2	USB D2-
3	USB D2+
4	GND

USB2

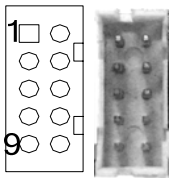


2.4.16 USB Connectors (USB3/USB4)

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. **USB3** and **USB4** are 10-pin standard onboard USB connectors.

Pin	Signal	Pin	Signal
1	USB POWER	2	USB POWER
3	USB D3-	4	USB D4-
5	USB D3+	6	USB D4+
7	GND	8	GND
9	GND	10	GND

USB3/USB4

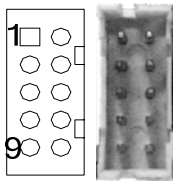


2.4.17 USB Connectors (USB5/USB6)

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. **USB5** and **USB6** are 10-pin standard onboard USB connectors.

Pin	Signal	Pin	Signal
1	USB POWER	2	USB POWER
3	USB D5-	4	USB D6-
5	USB D5+	6	USB D6+
7	GND	8	GND
9	GND	10	GND

USB5/USB6

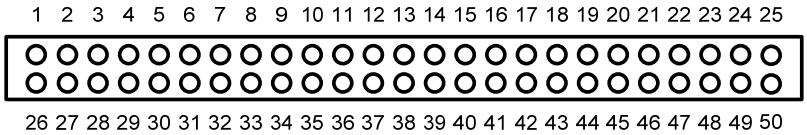


2.4.18 CompactFlash™ Socket (SCF1)

The board is equipped with a CompactFlash™ disk socket on the solder side to support an IDE2 interface CompactFlash™ disk card. The socket is especially designed to avoid incorrect installation of the CompactFlash™ disk card. When installing or removing the CompactFlash™ disk card, please make sure the system power is off. The CompactFlash™ disk card is defaulted as the C: or D: disk drive in your PC system.

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
Pin	**Signal**	**Pin**	**Signal**

14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND



CHAPTER 3 HAREDWARE INSTALLATION

Before installing the processor, please access Intel® website for more detailed information http://www.intel.com .

3.1 Installing the Processor

The **Intel® Core™ 2 Duo Mobile Processor or Mobile Intel® Celeron® Processors** are available as a boxed processor for laptop computers in the micro-FCPGA form factor. Intel recommends the processor should be installed by a computer professional since this electronic device may cause serious damage to the installer, system and processor if installed improperly.

Important: Before attempting to install a new processor, carefully review the documentation that came with your system and make sure that you will not be voiding your warranty by opening the computer or replacing your processor.

Instructions

1. Make sure that your system can accommodate the **Intel® Core™ 2 Duo Mobile Processor or Mobile Intel® Celeron® Processors** that you want to install. Check for motherboard, BIOS, and thermal compatibility by using the manufacturer's documentation for the laptop computer, or by contacting the vendor if necessary. This processor should only be installed in systems supporting the **Intel® Core™ 2 Duo Mobile Processor or Mobile Intel® Celeron® Processors**.

   Important Notes: Do not use an Intel® mobile processor in a desktop system and do not use a desktop processor in a mobile processor notebook. Since these processors have different electrical specifications, damage to the processor and system can occur.

2. Obtain access to your processor socket as described in the documentation for your system.

3. If the cooling solution prevents you from accessing the processor socket, you may need to remove it. Instructions on how to remove your cooling solution should be provided in the documentation that came with the system.

4. To un-install the current processor, use a screwdriver to disengage (open) the socket actuator, as shown in Figure 1 below. (The most commonly used sockets are Molex* or FoxConn* sockets, so they are used in the illustrations below.) The socket actuator should open after only a half turn or so, and you should then be able to remove the processor with your fingers.

Figure 1: Disengaging the Socket Actuator

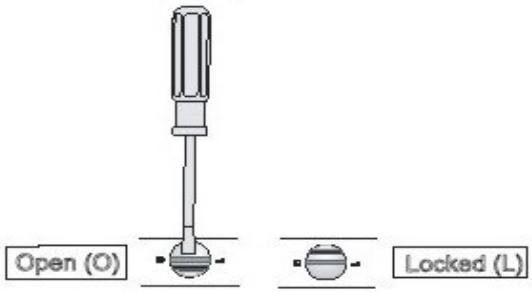
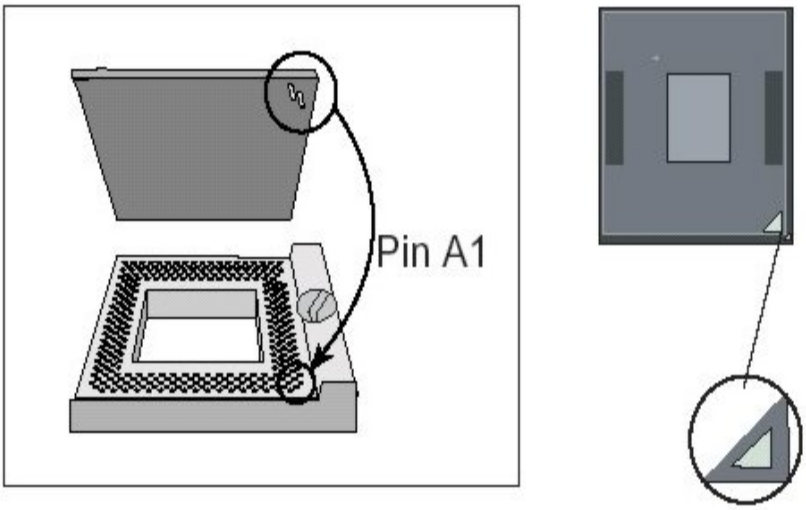


Figure 2: Aligning the Processor in the Socket

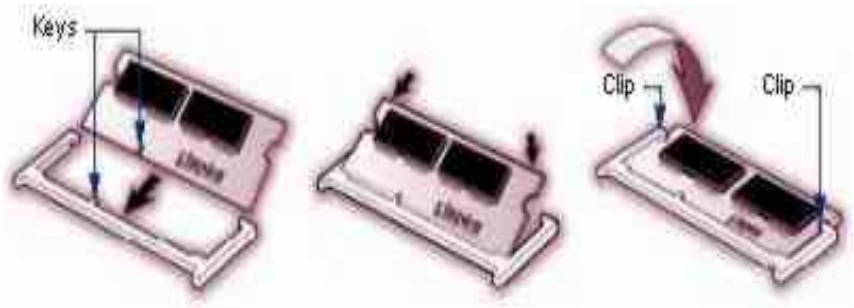


3.2 Installing the Memory

The board supports two 204-pin DDR3 SO-DIMM memory sockets with maximum memory capacity up to 8GB.

Please follow steps below to install the memory modules:

1 Push down latches on each side of the SO-DIMM socket.
2 Align the memory module with the socket that notches of memory module must match the socket keys for a correct intallation.
3 Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the SO-DIMM.
4 Install any remaining SO-DIMM modules.



CHAPTER 4 HARDWARE DESCRIPTION

4.1 Microprocessors

The **SHB211 Series** supports Intel® Core™ 2 Duo/Celeron® M processors, which make your system operated under Windows® XP and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

4.2 BIOS

The **SHB211 Series** uses AMI Plug and Play BIOS with a single 8Mbit SPI Flash.

4.3 System Memory

The **SHB211 Series** supports two 204-pin DDR3 DIMM sockets for a maximum memory of 8GB DDR3 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

4.4 I/O Port Address Map

The Intel® Core™ 2 Duo/Celeron® M CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Motherboard resources
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Motherboard resources
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000071] System CMOS/real time clock
[00000072 - 0000007F] Motherboard resources
[00000080 - 00000080] Motherboard resources
[00000081 - 00000083] Direct memory access controller
[00000084 - 00000086] Motherboard resources
[00000087 - 00000087] Direct memory access controller
[00000088 - 00000088] Motherboard resources
[00000089 - 0000008B] Direct memory access controller
[0000008C - 0000008E] Motherboard resources
[0000008F - 0000008F] Direct memory access controller
[00000090 - 0000009F] Motherboard resources
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000170 - 00000177] Secondary IDE Channel
[000001F0 - 000001F7] Primary IDE Channel
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[000002F8 - 000002FF] Communications Port (COM2)
[00000376 - 00000376] Secondary IDE Channel
[00000378 - 0000037F] Printer Port (LPT1)

[000003B0 - 000003BB] Mobile Intel(R) 4 Series Express Chipset Family
[000003C0 - 000003DF] Mobile Intel(R) 4 Series Express Chipset Family
[000003F6 - 000003F6] Primary IDE Channel
[000003F8 - 000003FF] Communications Port (COM1)
[00000400 - 0000041F] Intel(R) ICH9 Family SMBus Controller - 2930
[000004D0 - 000004D1] Motherboard resources
[00000500 - 0000057F] Motherboard resources
[00000800 - 0000087F] Motherboard resources
[00000A00 - 00000A0F] Motherboard resources
[00000A00 - 00000A0F] Motherboard resources
[00000A79 - 00000A79] ISAPNP Read Data Port
[00000D00 - 0000FFFF] PCI bus
[0000B000 - 0000B007] Mobile Intel(R) 4 Series Express Chipset Family
[0000B080 - 0000B09F] Intel(R) ICH9 Family USB Universal Host Controller - 2939
[0000B400 - 0000B41F] Intel(R) ICH9 Family USB Universal Host Controller - 2938
[0000B480 - 0000B49F] Intel(R) ICH9 Family USB Universal Host Controller - 2937
[0000B800 - 0000B81F] Intel(R) ICH9 Family USB Universal Host Controller - 2936
[0000B880 - 0000B89F] Intel(R) ICH9 Family USB Universal Host Controller - 2935
[0000BC00 - 0000BC1F] Intel(R) ICH9 Family USB Universal Host Controller - 2934
[0000C000 - 0000C00F] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000C080 - 0000C08F] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000C400 - 0000C403] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000C480 - 0000C487] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000C800 - 0000C803] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000C880 - 0000C887] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000D000 - 0000DFFF] Intel(R) ICH9 Family PCI Express Root Port 5 - 2948
[0000D800 - 0000D8FF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC
[0000E000 - 0000EFFF] Intel(R) ICH9 Family PCI Express Root Port 6 - 294A
[0000E800 - 0000E8FF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC #2
[0000FF90 - 0000FF9F] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000FFA0 - 0000FFAF] Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928

4.5 Interrupt Controller (IRQ) Map

The **SHB211 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

(ISA) 0	System timer
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 11	Intel(R) ICH9 Family SMBus Controller - 2930
(PCI) 16	Intel(R) ICH9 Family PCI Express Root Port 6 - 294A
(PCI) 16	Intel(R) ICH9 Family USB Universal Host Controller - 2937
(PCI) 16	Mobile Intel(R) 4 Series Express Chipset Family
(PCI) 16	Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC
(PCI) 17	Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
(PCI) 17	Intel(R) ICH9 Family PCI Express Root Port 5 - 2948
(PCI) 17	Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC #2
(PCI) 18	Intel(R) ICH9 Family USB Universal Host Controller - 2936
(PCI) 18	Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C
(PCI) 19	Intel(R) ICH9 Family USB Universal Host Controller - 2939
(PCI) 19	Intel(R) ICH9 Family USB Universal Host Controller - 2935
(PCI) 19	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
(PCI) 21	Intel(R) ICH9 Family USB Universal Host Controller - 2938
(PCI) 22	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 23	Intel(R) ICH9 Family USB Universal Host Controller - 2934
(PCI) 23	Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293A

CHAPTER 5 AMI BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

5.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <Del> key immediately.
2. After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

5.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

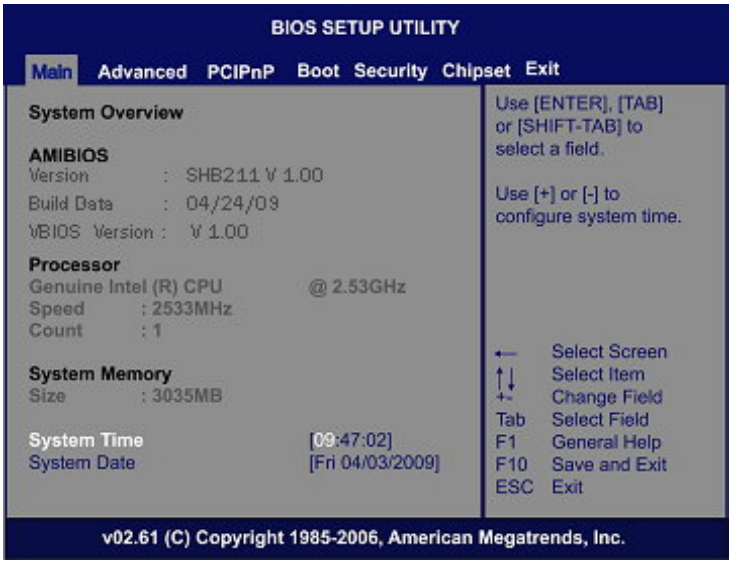
Note *Some of navigation keys differ from one screen to another.*

→← Left/Right	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F10	The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes.

Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

5.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



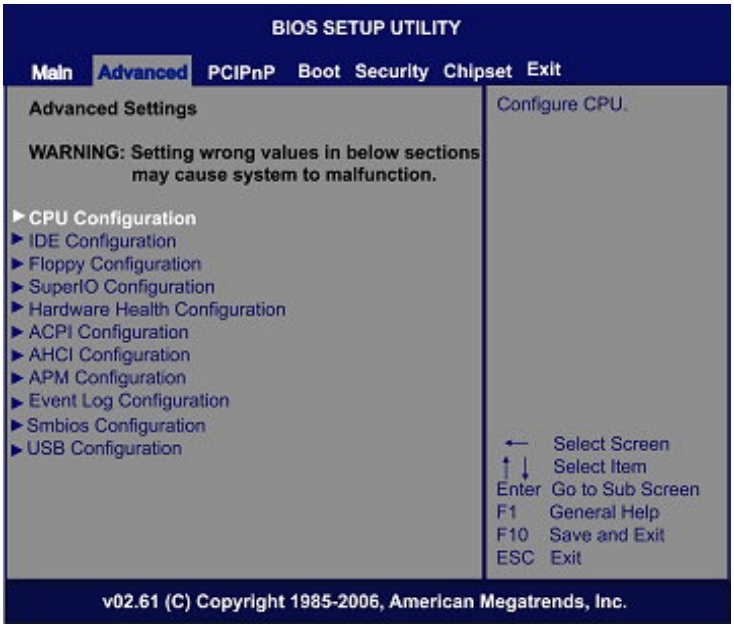
- **System Time/Date**
  Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

5.4 Advanced Menu

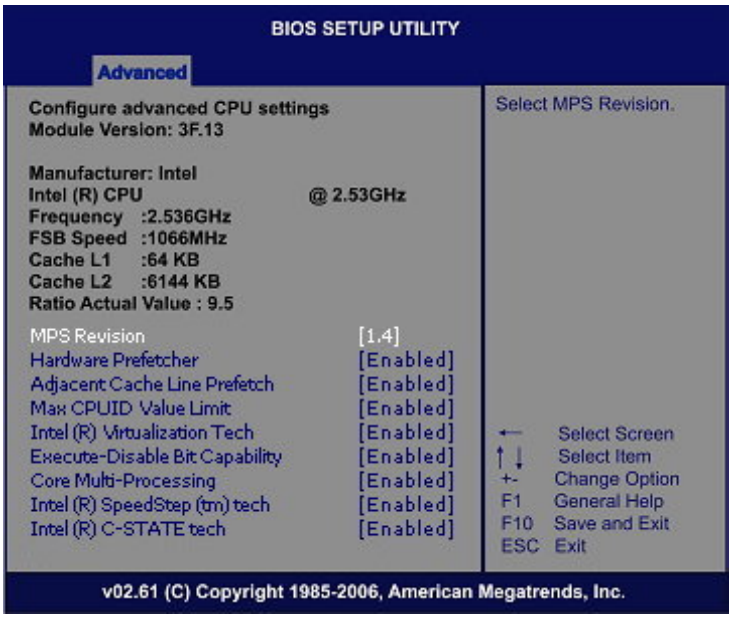
The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- CPU Configuration
- IDE Configuration
- Floppy Configuration
- SuperIO Configuration
- Hardware Health Configuration
- ACPI Configuration
- AHCI Configuration
- APM Configuration
- Event Log Configuration
- Intel VT-d Configuration
- Smbios Configuration
- USB Configuration

For items marked with "►", please press <Enter> for more options.



- **CPU Configuration**
  This screen shows the CPU Configuration, and you can change the value of the selected option.



  - **MPS Revision**
    Use this item to select MPS (Multi Processor Specification) Revision 1.1 or 1.4. The default setting is *1.4*.

  - **Hardware Prefetcher**
    This item automatically analyzes its requirements and prefetches data and instructions from the memory. When enabled, the processor's hardware prefetcher will be allowed to automatically prefetch data and code for the processor.

  - **Adjacent Cache Line Prefetch**
    This item has a hardware adjacent cache line prefetch mechanism that automatically fetches extra cache line whenever the processor requests for a cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well. The processor will retrieve the currently requested cache

line and the subsequent cache line when enabled.
The processor will only retrieve the currently requested cache line when disabled.

- **Max CPUID Value Limit**
  You can enable this item to let legacy operating systems boot even without support for CPUs with extended CPU ID functions.

- **Intel (R) Virtualization Tech**
  Use this feature to enable or disable the Intel Virtualization Technology (IVT) extensions, which allow multiple operating systems to run simultaneously on the same system.
  When the IVT extensions are enabled, it allows for hardware-assisted virtual machine management.

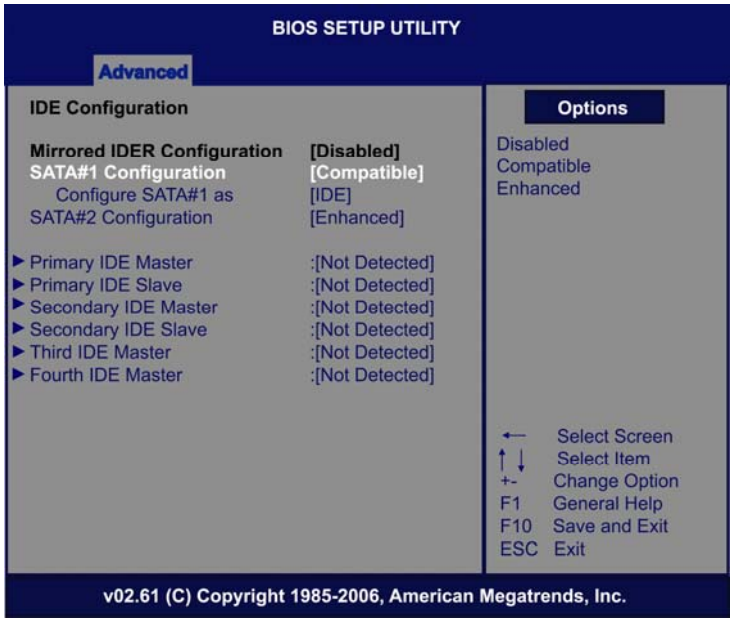
- **Execute-Disable Bit Capability**
  This item helps you enable or disable the No-Execution Page Protection Technology.

- **Core Multi-Processing**
  This feature controls the functionality of the Core Multi-Processing to allow the processor to execute multitasking function.

- **Intel (R) SpeedStep (tm) tech**
  This item helps you enable or disable the Intel SpeedStep Technology.

- **Intel (R) C-STATE tech**
  Use this item to enable or disable the C-State technology.

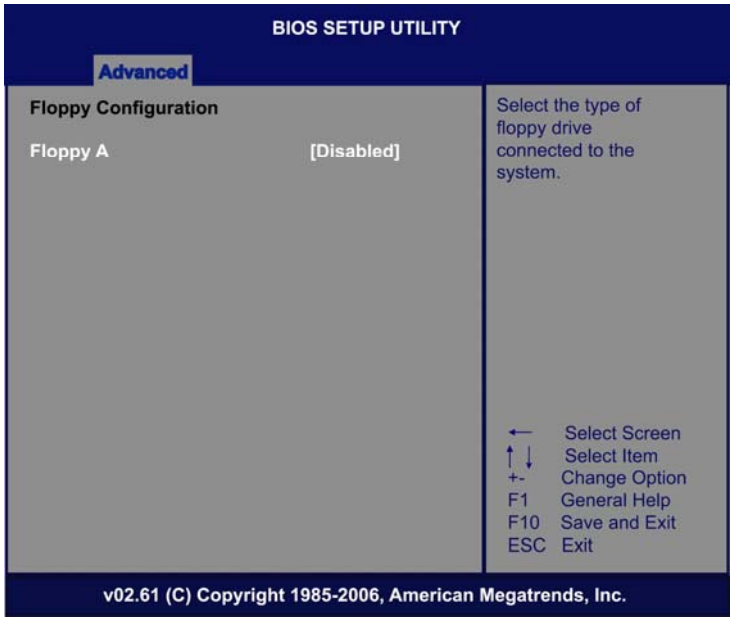
- **IDE Configuration**
  You can use this screen to select options for the IDE Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.



  - **SATA#1 Configuration**
    Use this item to control the onboard SATA controller. Here are the options for your selection, *Compatible*, *Disabled*, and *Enhanced*.
  - **Configure SATA#1 as**
    Use this item to choose the SATA operation mode. Here are the options for your selection, *IDE* and *AHCI*.
  - **SATA#2 Configuration**
    Use this item to control the onboard SATA controller. Here are the options for your selection, *Enhanced* and *Disabled*.
  - **Primary/Secondary/Third/Fourth IDE Master/Slave**
    Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more

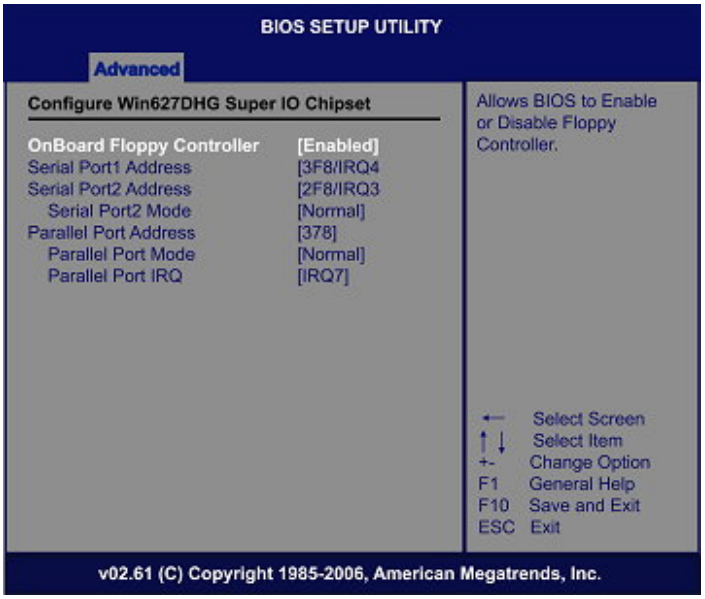
options.

- **Floppy Configuration**
  You can use this screen to select options for the Floppy Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.



  - **Floppy A**
    This item selects the type of floppy disk installed in the computer.

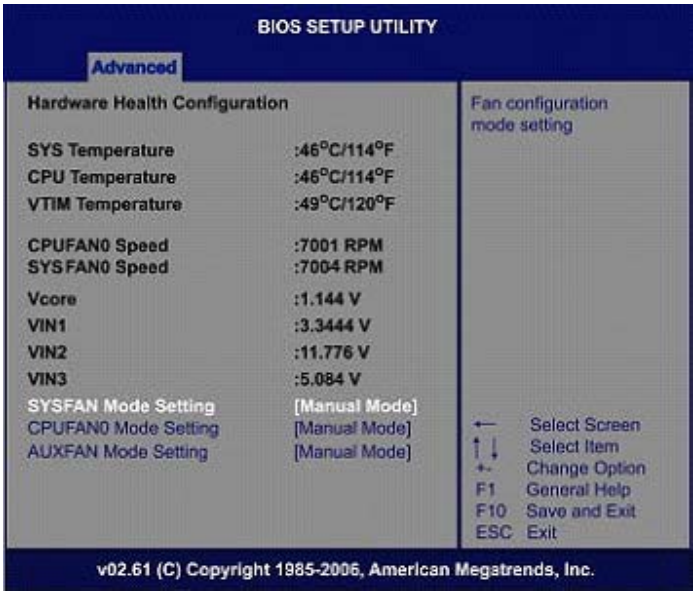
- **SuperIO Configuration**
  You can use this screen to select options for the SuperIO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **OnBoard Floppy Controller**
    Use this item to enable or disable the onboard floppy drive controller.
  - **Serial Port1 Address**
    This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *3F8/IRQ4*. The Fail-Safe default setting is *Disabled*.
  - **Serial Port2 Address**
    This option specifies the base I/O port address and Interrupt Request address of serial port 2. The Optimal setting is *2F8/IRQ3*. The Fail-Safe setting is *Disabled*.
  - **Serial Port2 Mode**
    This item specifies the mode used by the serial port 2.

- **Parallel Port Address**
  - **Parallel Port Mode**
    Select an operating mode for the onboard parallel (printer) port.
  - **Parallel Port IRQ**
    Use this item to set up the IRQ for onboard parallel port.

- **Hardware Health Configuration**
  This screen shows the Hardware Health Configuration, and a description of the selected item appears on the right side of the screen.

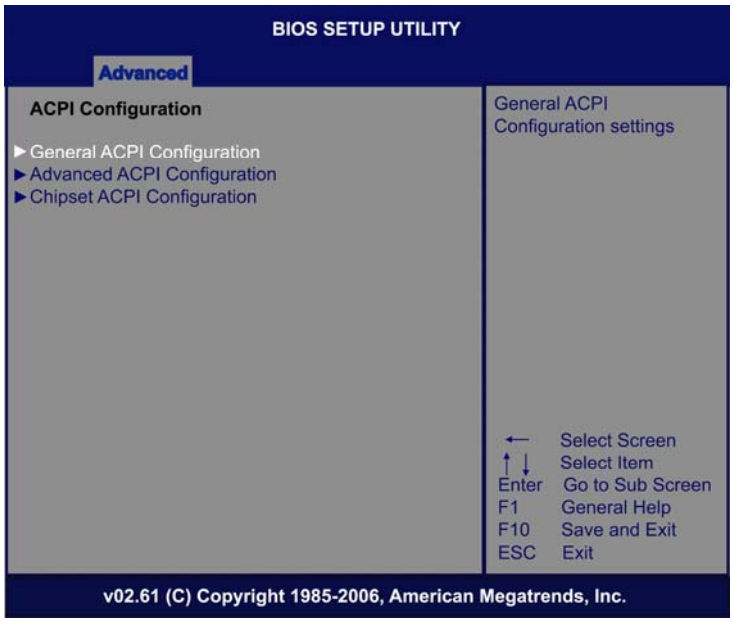


  - **H/W Health Function**
    You can select this item *Enabled* for the Hardware Health Monitoring Device. The Hardware Health Event Monitoring displays the temperature of CPU and System, Fan Speed, Vcore, etc.

  - **SYSFAN/CPUFAN/AUXFAN Mode Setting**
    These items can enable or disable the Smart Fan to adjust the CPU/system fan speed automatically in accordance with the current CPU temperature that can prevent the

system overheating. There are these options *Manual Mode* and *Thermal Cruise Mode*.

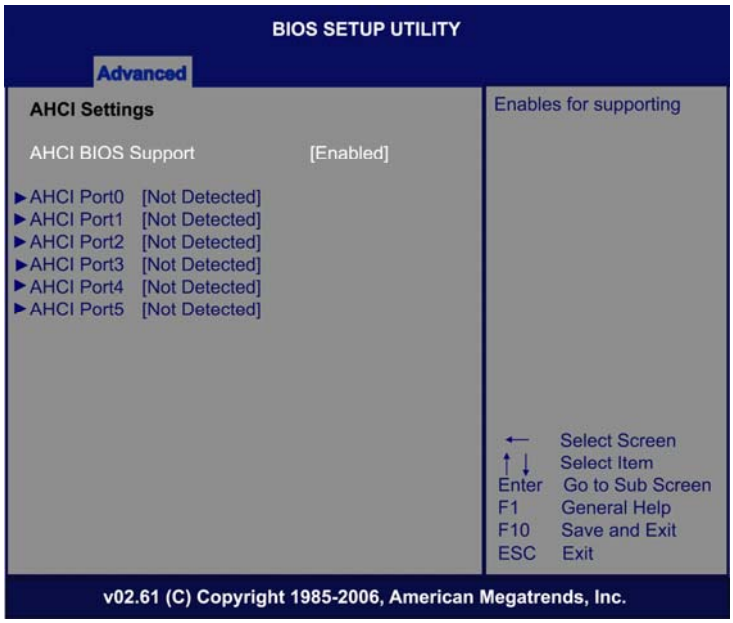
- **ACPI Configuration**
  You can use this screen to select options for the ACPI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **General ACPI Configuration**
    Scroll to this item and press <Enter> to view the General ACPI Configuration sub menu, which contains General ACPI (Advanced Configuration and Power Management Interface) options for your configuration.
  - **Advanced ACPI Configuration**
    Scroll to this item and press <Enter> to view the Advanced ACPI Configuration sub menu, which contains Advanced ACPI (Advanced Configuration and Power Management Interface) options for your configuration.
  - **Chipset ACPI Configuration**

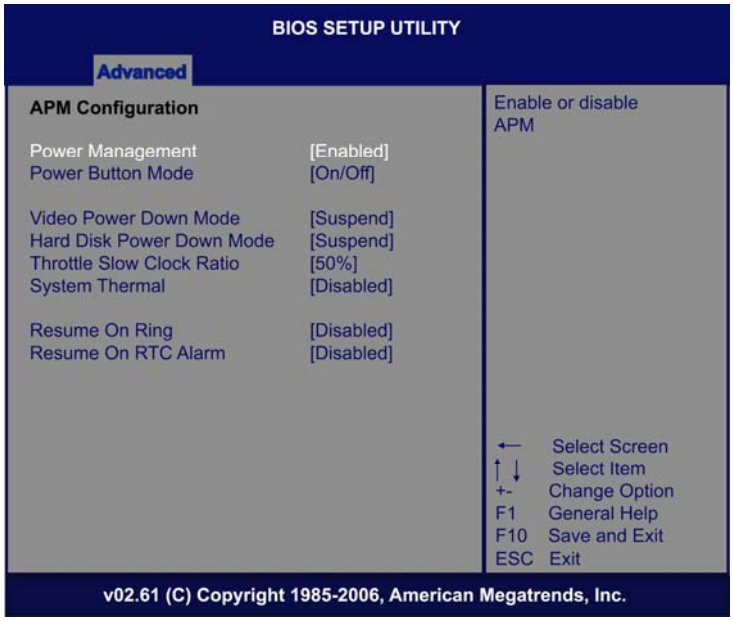
Scroll to this item and press <Enter> to view the Chipset ACPI Configuration sub menu, which contains Chipset ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

- **AHCI Configuration**
  You can use this screen to select options for the AHCI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **AHCI BIOS Support**
    You can enable or disable this item to control the AHCI function of the SATA controller.

- **APM Configuration**
  You can use this screen to select options for the APM Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **Power Management**
    Set this value to allow Power Management/APM support. The default setting is *Enabled*.

Disabled	Set this value to prevent the chipset power management and APM (Advanced Power Management) features.
Enabled	Set this value to allow the chipset power management and APM (Advanced Power Management) features. This is the default setting.

- **Power Button Mode**
  This option specifies how the externally mounted power button on the front of the computer chassis is used. The default setting is *On/Off*.

On/Off	Pushing the power button turns the computer on or off. This is the default setting. This is the default setting.
Standby	Pushing the power button places the computer in Standby mode.
Suspend	Pushing the power button places the computer in Suspend mode or Full On power mode.

- **Video Power Down Mode**
  This option specifies the Power State that the video subsystem enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired. The default setting is *Suspend*.

Disabled	This setting prevents the BIOS from initiating any power saving modes concerned with the video display or monitor.
Standby	This option places the monitor into standby mode after the specified period of display inactivity has expired. This means the monitor is not off. The screen will appear blacked out. The standards do not cite specific power ratings because they vary from monitor to monitor.
Suspend	This option places the monitor into suspend mode after the specified period of display inactivity has expired. This means the monitor is not off. The screen will appear blacked out. The standards do not cite specific power ratings because they vary from monitor to monitor, but this setting use less power than Standby mode. This is the default setting.

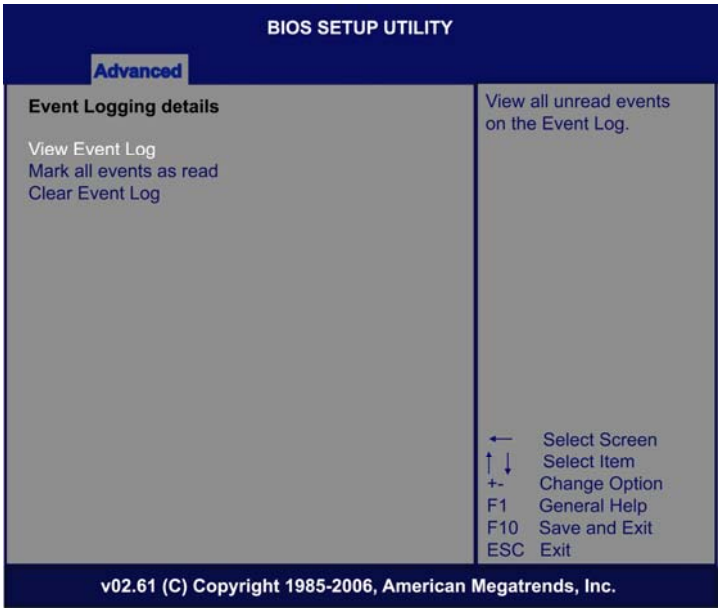
- **Hard Disk Drive Power Down Mode**
  This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The default setting is *Suspend*.

Disabled	This setting prevents hard disk drive power down mode.

Standby	This option stops the hard disk drives from spinning during a system standby.
Suspend	This option cuts the power to the hard disk drives during a system suspend. This is the default setting.

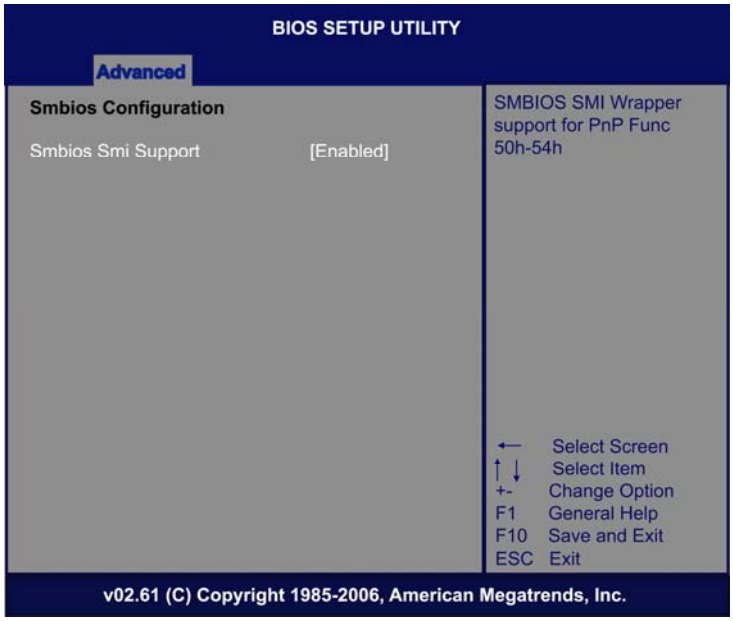
- **Throttle Slow Clock Ratio**
  Use this item to specify the speed of the system clock when running the power saving states.
- **System Thermal**
  Use this item to enable or disable the function of system temperature control.
- **Resume On Ring**
  This item enables or disables the function of Resume On Ring that resume the system through incoming calls.
- **Resume On RTC Alarm**
  You can set "Resume On RTC Alarm" item to enabled and key in Data/time to power on system.

- **Event Log Configuration**
  This screen shows the Event Log Configuration, and a description of the selected item appears on the right side of the screen.



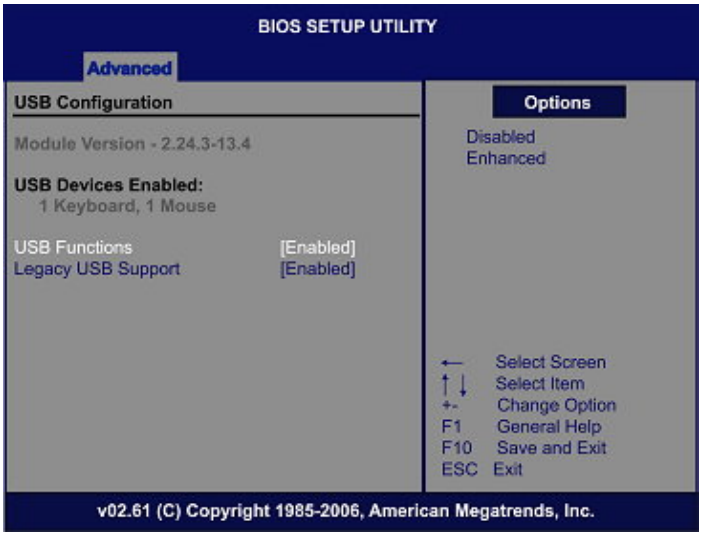
  - **View Event Log**
    This item is to display the system events in the System Event Log.
  - **Mark all events as read**
    This item is to mark all events in the log as read.
  - **Clear Event Log**
    Enable this item is to clear the event log each time the system is rebooted.

- **Smbios Configuration**
  You can use this screen to select options for the Smbios Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **Smbios Smi Support**
    When this item is enabled, the system can support the SMBIOS SMI wrapper for the PnP.

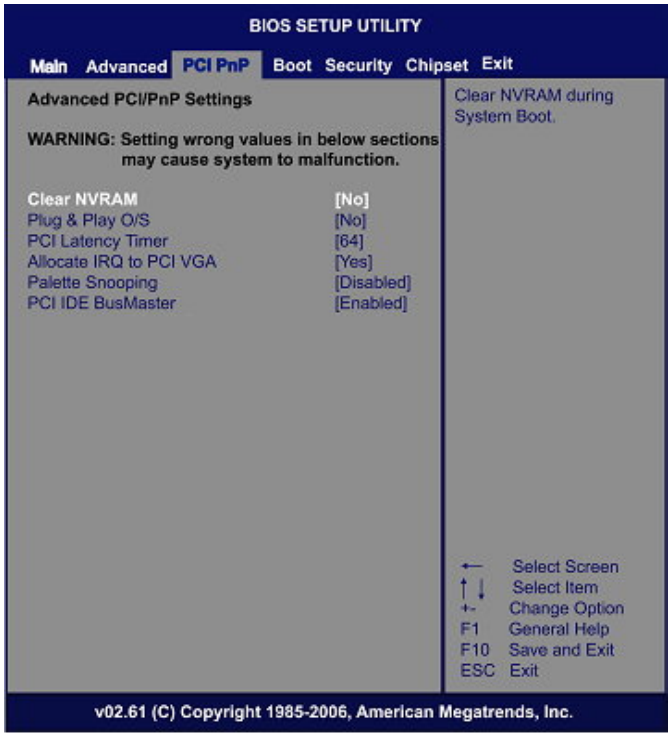
- **USB Configuration**
  You can use this screen to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



  - **USB Functions**
    This item allows you to enable or disable USB functions.
  - **Legacu USB Support**
    Use this item to enable or disable support for USB device on legacy operating system. The default setting is *Enabled*.

5.5 PCI PnP Menu

The PCI PnP menu allows users to change the advanced settings for PCI/PnP devices.


BIOS SETUP UTILITY
Main Advanced PCI PnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Clear NVRAM [No]
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Enabled]
Clear NVRAM during System Boot.
Select Screen
Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

- **Clear NVRAM**
  Use this item to clear the data in the NVRAM (CMOS). Here are the options for your selection, *No* and *Yes*.

- **Plug & Play O/S**
  When the setting is No, Use this item to configure all the devices in the system. When the setting is Yes and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. The default setting is *No*.

- **PCI Latency Timer**
  This item controls how long a PCI device can hold the PCI

bus before another takes over. The longer the latency, the longer the PCI device can retain control of the bus before handing it over to another PCI device. There are several options for your selection.

- **Allocate IRQ to PCI VGA**
  This item allows BIOS to choose an IRQ to assign for the PCI VGA card. Here are the options for your selection, *No* and *Yes*.

- **Palette Snooping**
  Some old graphic controllers need to "snoop" on the VGA palette, and then map it to their display as a way to provide boot information and VGA compatibility. This item allows such snooping to take place. Here are the options for your selection, *Disabled* and *Enabled*.

- **PCI IDE BusMaster**
  This item is a toggle for the built-in driver that allows the onboard IDE controller to perform DMA (Direct Memory Access) transfer. Here are the options for your selection, *Disabled* and *Enabled*.

- **OffBoard PCI/ISA IDE Card**
  This item is for any other non-onboard PCI/ISA IDE controller adapter. There are several options for your selection.

- **IRQ3/4/5/7/9/10/11/14/15**
  These items will allow you to assign each system interrupt a type, depending on the type of device using the interrupt. The option "Available" means the IRQ is going to assign automatically. Here are the options for your selection, *Available* and *Reserved*.

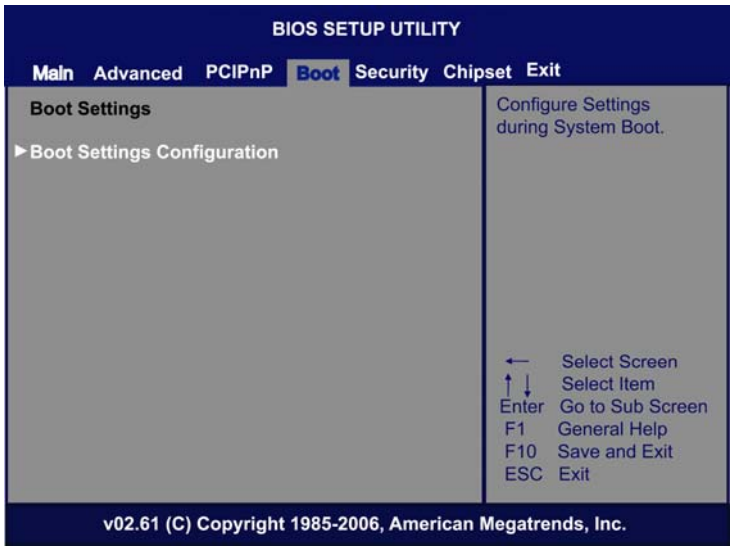
- **DMA Channel 0/1/3/5/6/7**
  These items will allow you to assign each DMA channel a type, depending on the type of device using the channel. The option "Available" means the channel is going to assign automatically. Here are the options for your selection, *Available* and *Reserved*.

5.6 Boot Menu

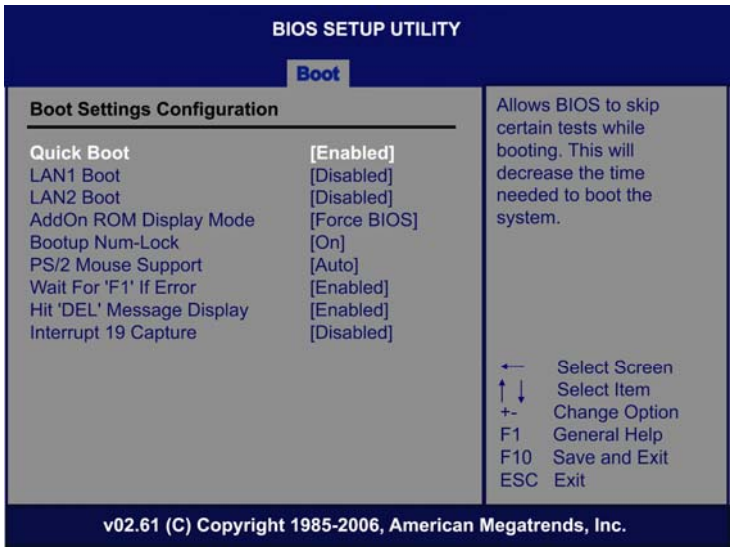
The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- Boot Settings Configuration

For items marked with "►", please press <Enter> for more options.



- **Boot Settings Configuration**


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
LAN1 Boot [Disabled]
LAN2 Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
PS/2 Mouse Support [Auto]
Wait For 'F1' If Error [Enabled]
Hit 'DEL' Message Display [Enabled]
Interrupt 19 Capture [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑ ↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

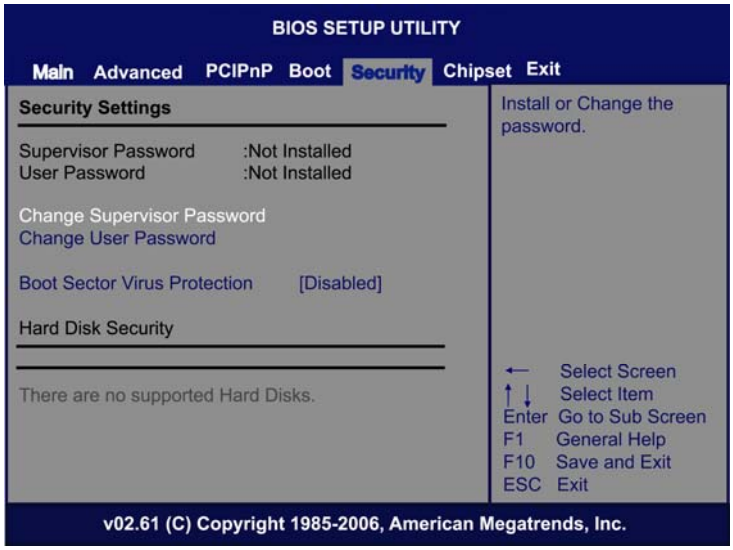
  - **Quick Boot**
    Enabling this item lets the BIOS skip some power on self tests (POST). The default setting is *Enabled*.
  - **LAN1/LAN2 Boot**
    Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.
  - **AddOn ROM Display Mode**
    This item selects the display mode for option ROM. The default setting is *Force BIOS*.
  - **Boot Num-Lock**
    Use this item to select the power-on state for the NumLock. The default setting is *On*.
  - **Wait For 'F1' Of Error**
    If this item is enabled, the system waits for the F1 key to be pressed when error occurs. The default setting is *Enabled*.
  - **Hit 'DEL' Message Display**
    If this item is enabled, the system displays the message "Press DEL to run Setup" during POST.The default setting

is *Enabled*.

- **Interrupt 19 Capture**
  If this item is enabled, this function makes the option ROMs to trap Interrupt 19. The default setting is *Disabled*.

5.7 Security Menu

The Security menu allows users to change the security settings for the system.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Security Settings
Supervisor Password :Not Installed
User Password :Not Installed
Change Supervisor Password
Change User Password
Boot Sector Virus Protection [Disabled]
Hard Disk Security
There are no supported Hard Disks.
Install or Change the password.
← Select Screen
↑ ↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

- **Supervisor Password**
  This item indicates whether a supervisor password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **User Password**
  This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **Change Supervisor Password**
  Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor

password.

- **Change User Password**
  Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password.

- **Boot Sector Virus Protection**
  This option is near the bottom of the Security Setup screen. The default setting is *Disabled*

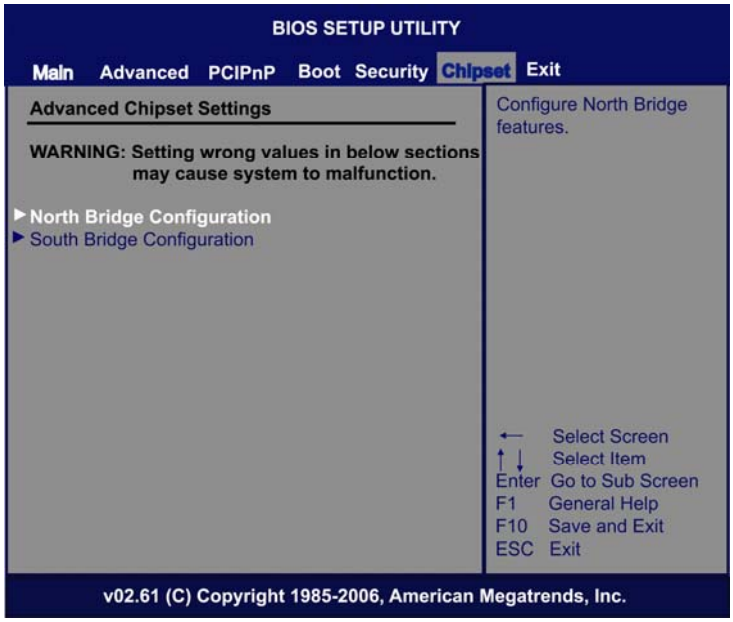
Disabled	Set this value to prevent the Boot Sector Virus Protection. This is the default setting.
Enabled	Select Enabled to enable boot sector protection. It displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. You may have to type N several times to prevent the boot sector write. Boot Sector Write! Possible VIRUS: Continue (Y/N)? _ The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard disk drive Service: Format!!! Possible VIRUS: Continue (Y/N)?

5.8 Chipset Menu

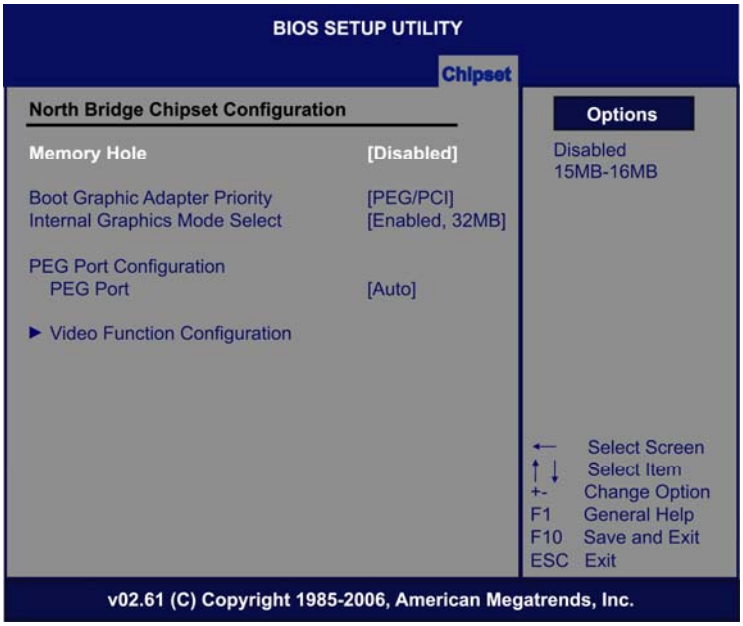
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge Configuration
- South Bridge Configuration

For items marked with "►", please press <Enter> for more options.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
North Bridge Configuration
South Bridge Configuration
Configure North Bridge features.
Select Screen
Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

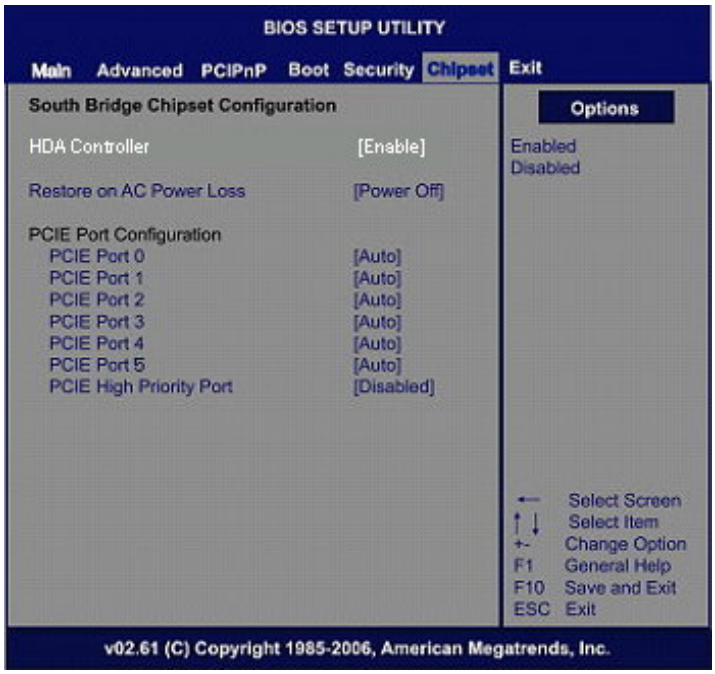
- **North Bridge Configuration**



  - **Memory Hole**
    You can reserve this area of system memory for ISA adapter ROM. When this area is reserved it cannot be cached. Check the user information of peripherals that need to use this area o f system memory for the memory requirements. Here are the options, *Disabled* and *15M-16M*.
  - **Boot Graphic Adapter Priority**
    This item allows you to select the graphics controller as the primary boot device.
  - **Internal Graphics Mode Select**
    This item allows you to select the amout of system memory used by the internal graphics device.
  - **PEG Port Configuration/PEG Port**
    This item is a toggle to enable or disable the PCI Express port. Here are the options for your selection, *Auto* and *Disabled*.

- **Video Function Configuration**
  You can press <Enter> for the sub-menu to set up video function.

- **South Bridge Configuration**

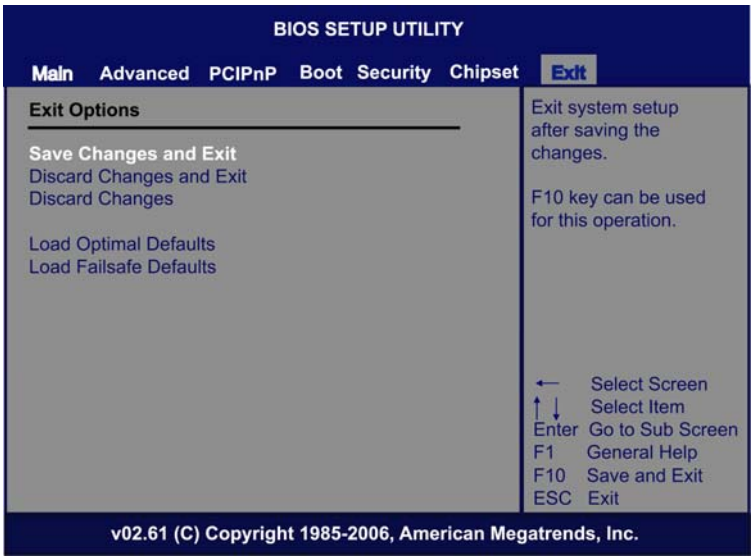


- **USB Controller**
  This item allows you to enable or disable USB function/controller.
- **Restore on AC Power Loss**
  This item can control how the PC will behave once power is restored following a power outage, or other unexpected shutdown.

- **PCIE Port Configuration**
  This item allows you to set or disable the PCI Express Ports.

5.9 Exit Menu

The Exit menu allows users to load your system configuration with optimal or failsafe default values.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑ ↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Exit* from the Exit menu and press <Enter>. Select Ok to save changes and exit.
- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration. Select *Discard Changes and Exit* from the Exit menu and press <Enter>. Select Ok to discard changes and exit.
- **Discard Changes**
  Use this item to abandon all changes.

- **Load Optimal Defaults**
  It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

- **Load Fail-Safe Defaults**
  It automatically sets all Setup options to a complete set of default settings when you select this option. The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Select the Fail-Safe Setup options if your computer is experiencing system configuration problems. Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. Select Ok to load Fail-Safe defaults.

MEMO

CHPATER 6 INSTALLATION OF DRIVERS

The device drivers are located on the Product Information CD-ROM that comes with the **SHB211 Series** package. The auto-run function of drivers will guide you to install the utilities and device drivers under a Windows system. You can follow the onscreen instructions to install these devices:

- Chipse
- Audio
- VGA
- LAN

6.1 Installing Chipset Driver

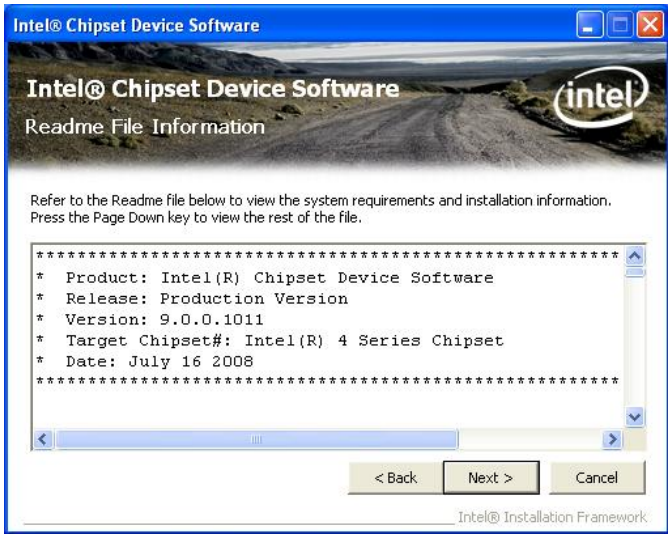
1. Run the SETUP.EXE program from the driver directory in your driver CD. Click "Next" to next step.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

2. An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Refer to the Readme file below to view the system requirements and installation information.


Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.0.0.1011
* Target Chipset#: Intel(R) 4 Series Chipset
* Date: July 16 2008
****
< Back
Next >
Cancel
Intel® Installation Framework

3-1 Please wait while running the following setup operations.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Copying File: CSVer.dll
Creating Key: HKLM\SOFTWARE\Intel\Infinst\Language=ENU,sz
Installing Driver: Intel(R) 4 Series Chipset Processor to I/O Controller - 2E10
Version: 9.0.0.1009
Installing Driver: Intel(R) ICH10DO LPC Interface Controller - 3A14
Version: 9.0.0.1009
Installing Driver: Intel(R) ICH10 Family PCI Express Root Port 1 - 3A70
Version: 9.0.0.1009
Installing Driver: Intel(R) ICH10 Family PCI Express Root Port 5 - 3A78
Version: 9.0.0.1009
Next
Intel® Installation Framework

3-2 Please wait while running the following setup operations.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) ICH10 Family USB Universal Host Controller - 3A68
Version: 9.0.0.1005
Installing Driver: Intel(R) ICH10 Family USB Universal Host Controller - 3A69
Version: 9.0.0.1005
Installing Driver: Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6A
Version: 9.0.0.1005
Installing Driver: Intel(R) ICH10 Family USB Enhanced Host Controller - 3A6C
Version: 9.0.0.1005
Click Next to continue.
Next
Intel® Installation Framework

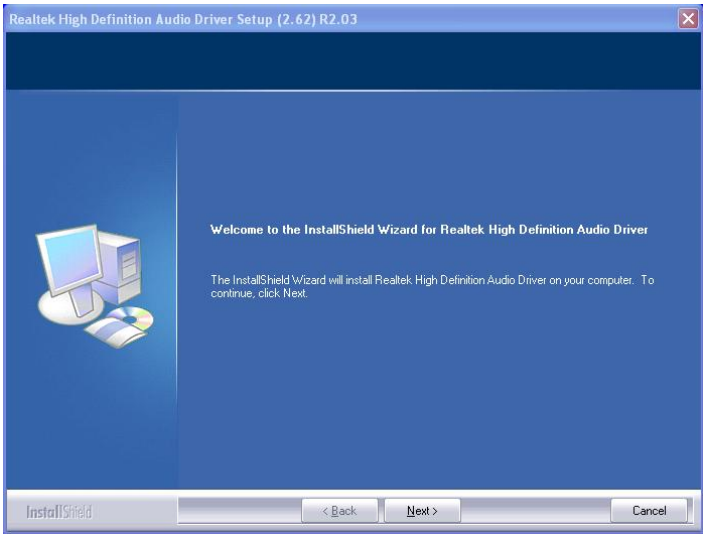
4. Click "Finish" to complete the setup process.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

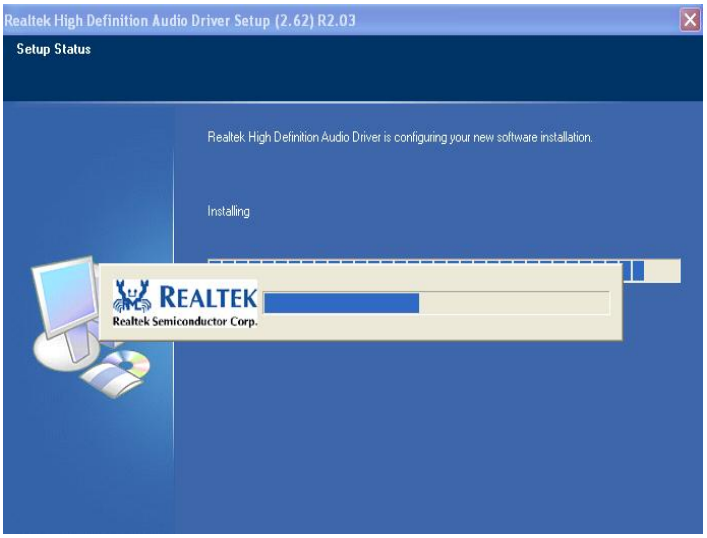
5. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and go on next step.

6.2 Installing AUDIO Driver

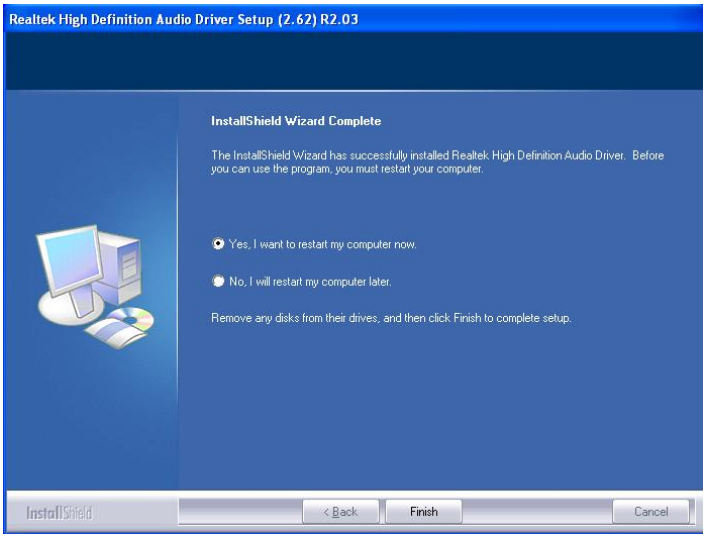
1. Run the InstallShield Wizard for Realtek High Definition Audio Driver from the driver directory in your driver CD. Click "Next" to next step.


Realtek High Definition Audio Driver Setup (2.62) R2.03
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

2. Click "Install" to start the installation, and wait while running the installation operation.

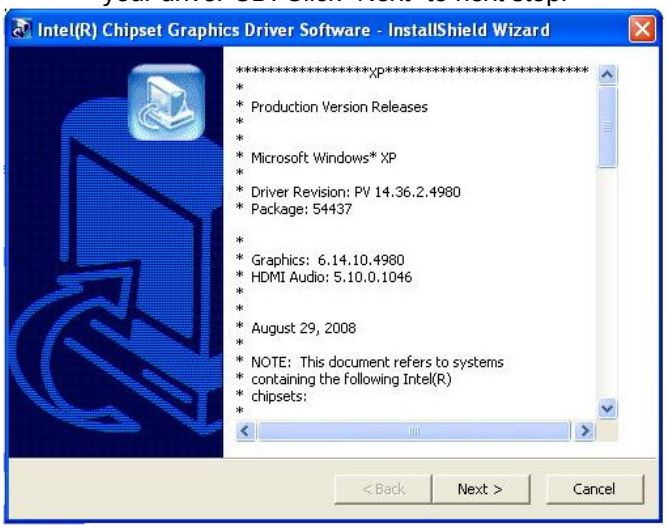

Realtek High Definition Audio Driver Setup (2.62) R2.03
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
Installing
REALTEK
Realtek Semiconductor Corp.

3. Click "Finish" to complete the installation.

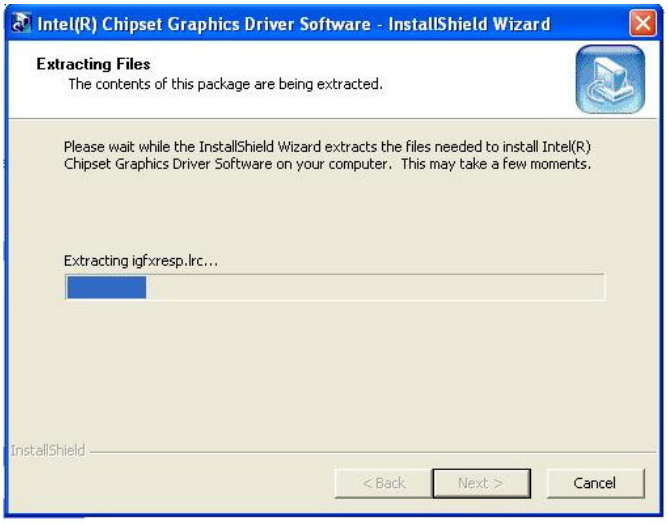

Realtek High Definition Audio Driver Setup (2.62) R2.03
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

6.3 Installing VGA Driver

1. Run the SETUP.EXE program from the driver directory in your driver CD. Click "Next" to next step.



(1-1)


Intel(R) Chipset Graphics Driver Software - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.
Extracting igfxresp.lrc...
InstallShield
< Back
Next >
Cancel

(1-2)

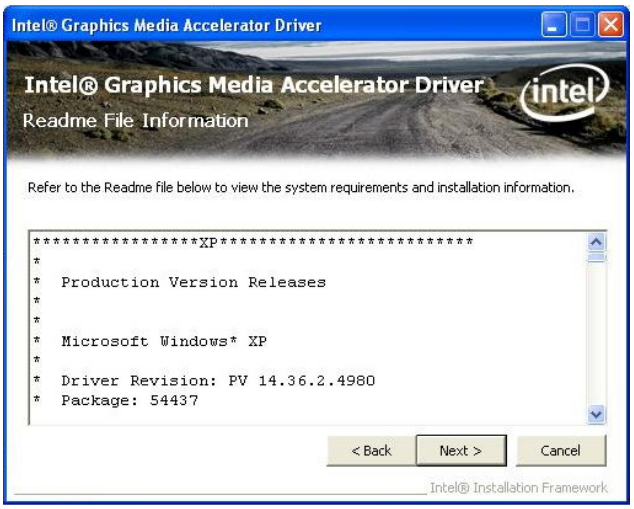
Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Welcome to the Setup Program
This setup program will install the following software onto this computer:
- Intel® Graphics Media Accelerator Driver
- Intel® High Definition Audio HDMI Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

(1-3)

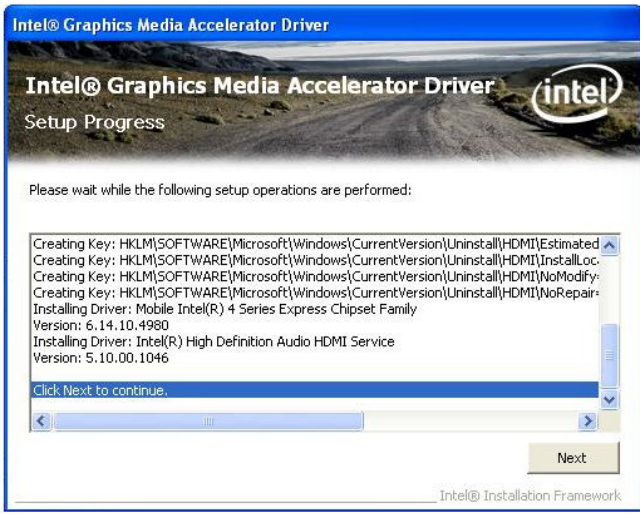
2. An Intel® License Agreement appears to show you the important information. Click "Yes" to next step.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. The message of Readme File Information appears to show you the system requirements and installation information. Please click "Next".


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
**********XP**********
* Production Version Releases
* Microsoft Windows* XP
* Driver Revision: PV 14.36.2.4980
* Package: 54437
< Back
Next >
Cancel
Intel® Installation Framework

4. Please wait while running the following setup operations. When this message appears, please click "Next".


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Progress
Please wait while the following setup operations are performed:
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\Estimated
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\InstallLoc
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoModify
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoRepair
Installing Driver: Mobile Intel(R) 4 Series Express Chipset Family
Version: 6.14.10.4980
Installing Driver: Intel(R) High Definition Audio HDMI Service
Version: 5.10.00.1046
Click Next to continue.
Next
Intel® Installation Framework

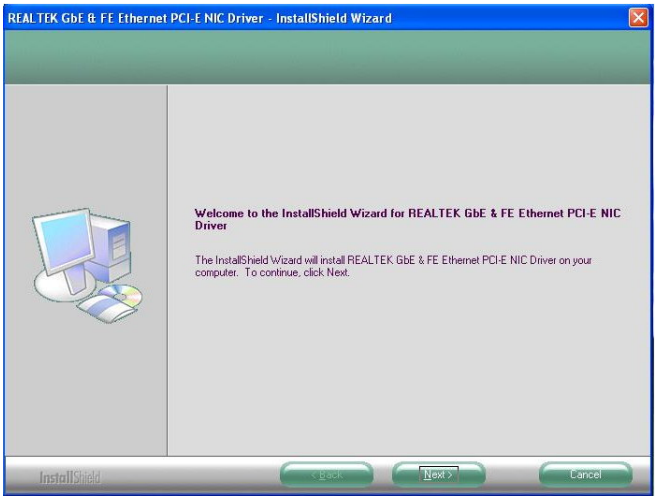
5. Click "Finish" to complete the setup process.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

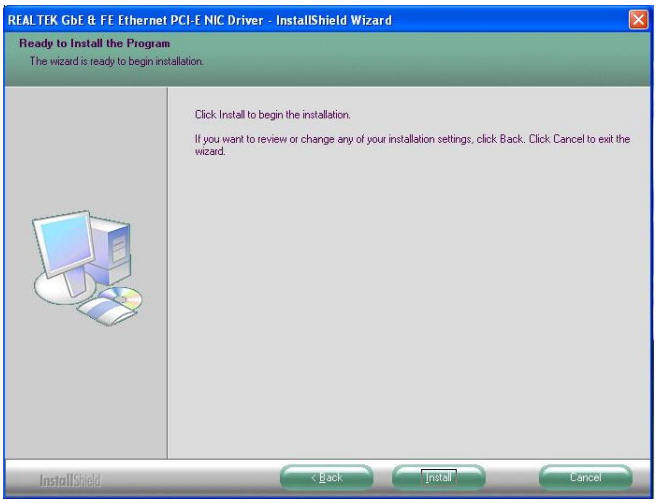
6. You will be asked to reboot your computer when the installation is completed. Please click "Yes, I want to restart my computer now" if you don't need to install any other drivers. Otherwise, please click "No, I will restart my computer later", and click "Finish" to complete the installation.

6.4 Installing LAN Driver

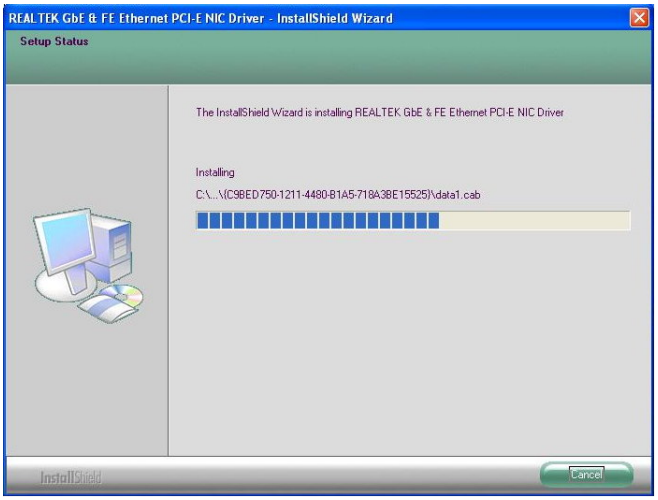
1. Run the InstallShield Wizard for Network connections from the driver directory in your driver CD. Click "Next" for next step.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

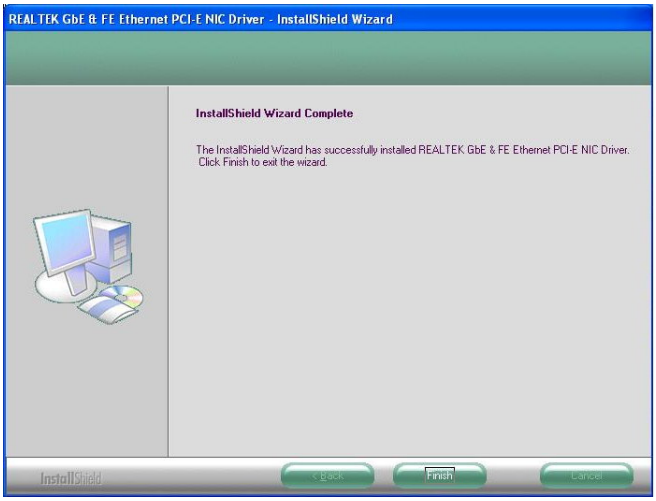
2. Click "Install" to start the installation.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

3. Please wait while running the following installation operation.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Setup Status
The InstallShield Wizard is installing REALTEK GbE & FE Ethernet PCI-E NIC Driver
Installing
C:\...\{C9BED750-1211-4480-B1A5-718A3BE15525}\data1.cab
InstallShield
Cancel

4. Click "Finish" to complete the installation.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

MEMO

APPENDIX A WATCHDOG TIME R

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start

↓

Un-Lock WDT

:O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O

↓

Set WDT Funtion

O 2E 2D
O 2F 20

Select Logic device

O 2E 07
O 2F 08

↓

Activate WDT

:O 2E 30
O 2F 01

Set Second or Minute

O 2E F5
O 2F N N=00 or 08(See below table)

↓

Set base timer

:O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255

↓

WDT counting

re-set timer **:O 2E F6**
O 2F M ; M=00,01,02,…FF(See below table)

↓

IF No re-set timer **:WDT time-out, generate RESET**

IF to disable WDT **:O 2E 30**
O 2F 00 ; Can be disable at any time

N=00

M= 00h: Time-out Disable
01h: Time-out occurs after 1 second
02h: Time-out occurs after 2 second
03h: Time-out occurs after 3 second
…….....
FFh: Time-out occurs after 255 second

N=08

M= 00h: Time-out Disable
01h: Time-out occurs after 1 minute
02h: Time-out occurs after 2 minutes
03h: Time-out occurs after 3 minutes
…….....

FFh: Time-out occurs after 255 minutes

APPENDIX B PICMG v1.3 INTERFACE DEFINITION

x16 PCIe Connector A			x16 PCIe Connector C		
	Side B	Side A		Side B	Side A
1	N.C	N.C	1	USB0P	GND
2	GND	GND	2	USB0N	GND
3	N.C	N.C	3	GND	USB1P
4	N.C	N.C	4	GND	USB1N
5	N.C	WAKE#	5	USB2P	GND
6	PWRBT#	PME#	6	USB2N	GND
7	PWRGD	PSON#	7	GND	USB3P
8	SHB_RST#	PERST#	8	GND	USB3N
9	CFG0	CFG1	9	USBOC0#	GND
10	CFG2	CFG3	10	GND	USBOC1#
11	RSVD	GND	11	USBOC2#	GND
Mechanical Key					
12	GND	N.C	12	GND	USBOC3#
13	b_PETp0	GND	13	N.C	GND
14	b_PETn0	GND	14	N.C	GND
15	GND	b_PERp0	15	GND	N.C
16	GND	b_PERn0	16	GND	N.C
17	b_PETp1	GND	17	N.C	GND
18	b_PETn1	GND	18	N.C	GND
19	GND	b_PERp1	19	GND	N.C
20	GND	b_PERn1	20	GND	N.C
21	b_PETp2	GND	21	N.C	GND
22	b_PETn2	GND	22	N.C	GND
23	GND	b_PERp2	23	GND	N.C
24	GND	b_PERn2	24	GND	N.C
25	b_PETp3	GND	25	N.C	GND
26	b_PETn3	GND	26	N.C	GND
27	GND	b_PERp3	27	GND	N.C
28	GND	b_PERn3	28	GND	N.C
Mechanical Key					

29	REFCLK0+	GND	29	N.C	GND
30	REFCLK0-	GND	30	N.C	GND
31	GND	REFCLK1+	31	N.C	N.C
32	RSVD	REFCLK1-	32	N.C	N.C
33	REFCLK2+	GND	33	N.C	N.C
34	REFCLK2-	GND	34	N.C	GND
35	GND	REFCLK3+	35	N.C	GND
36	RSVD	REFCLK3-	36	GND	N.C
37	REFCLK4+	GND	37	GND	N.C
38	REFCLK4-	GND	38	N.C	GND
39	GND	N.C	39	N.C	GND
40	RSVD	N.C	40	GND	N.C
41	N.C	GND	41	GND	N.C
42	N.C	GND	42	+3.3V	+3.3V
43	GND	N.C	43	+3.3V	+3.3V
44	GND	N.C	44	+3.3V	+3.3V
45	a_PETp0	GND	45	+3.3V	+3.3V
46	a_PETn0	GND	46	+3.3V	+3.3V
47	GND	a_PERp0	47	+3.3V	+3.3V
48	GND	a_PERn0	48	+3.3V	+3.3V
49	a_PETp1	GND	49	+3.3V	+3.3V
50	a_PETn1	GND	50	+3.3V	+3.3V
51	GND	a_PERp1	51	GND	GND
52	GND	a_PERn1	52	GND	GND
53	a_PETp2	GND	53	GND	GND
54	a_PETn2	GND	54	GND	GND
55	GND	a_PERp2	55	GND	GND
56	GND	a_PERn2	56	GND	GND
57	a_PETp3	GND	57	GND	GND
58	a_PETn3	GND	58	GND	GND
59	GND	a_PERp3	59	+5V	+5V
60	GND	a_PERn3	60	+5V	+5V
61	a_PETp4	GND	61	+5V	+5V
62	a_PETn4	GND	62	+5V	+5V
63	GND	a_PERp4	63	GND	GND

Mechanical Key					
64	GND	a_PERn4	64	GND	GND
65	a_PETp5	GND	65	GND	GND
66	a_PETn5	GND	66	GND	GND
67	GND	a_PERp5	67	GND	GND
68	GND	a_PERn5	68	GND	GND
69	a_PETp6	GND	69	GND	GND
70	a_PETn6	GND	70	GND	GND
71	GND	a_PERp6	71	GND	GND
72	GND	a_PERn6	72	GND	GND
73	a_PETp7	GND	73	+12V	+12V
74	a_PETn7	GND	74	+12V	+12V
75	GND	a_PERp7	75	+12V	+12V
76	GND	a_PERn7	76	+12V	+12V
77	N.C	GND	77	+12V	+12V
78	+3.3V	+3.3V	78	+12V	+12V
79	+3.3V	+3.3V	79	+12V	+12V
80	+3.3V	+3.3V	80	+12V	+12V
81	+3.3V	+3.3V	81	+12V	+12V
82	RSVD	RSVD	82	+12V	+12V
X8 PCIe Connector B			**X8 PCIe Connector D**		
	Side B	**Side A**		**Side B**	**Side A**
1	+5Vaux	+5Vaux	1	INTB#	INTA#
2	GND	N.C	2	INTD#	INTC#
3	a_PETp8	GND	3	GND	N.C
4	a_PETn8	GND	4	REQ3#	GNT3#
5	GND	a_PERp8	5	REQ2#	GNT2#
6	GND	a_PERn8	6	PCI_RST#	GNT1#
7	a_PETp9	GND	7	REQ1#	GNT0#
8	a_PETn9	GND	8	REQ0#	SERR#
9	GND	a_PERp9	9	N.C	+3.3V
10	GND	a_PERn9	10	GND	N.C
11	N.C	GND	11	N.C	GND
Mechanical Key					
12	GND	N.C	12	CLKC	CLKD
13	a_PETp10	GND	13	GND	+3.3V

Mechanical Key					
14	a_PETn10	GND	14	CLKA	CLKB
15	GND	a_PERp10	15	+3.3V	GND
16	GND	a_PERn10	16	AD31	GND
17	a_PETp11	GND	17	AD29	+3.3V
18	a_PETn11	GND	18	N.C	AD30
19	GND	a_PERp11	19	AD27	AD28
20	GND	a_PERn11	20	AD25	GND
21	a_PETp12	GND	21	GND	AD26
22	a_PETn12	GND	22	C/BE3#	AD24
23	GND	a_PERp12	23	AD23	+3.3V
24	GND	a_PERn12	24	GND	AD22
25	a_PETp13	GND	25	AD21	AD20
26	a_PETn13	GND	26	AD19	N.C
27	GND	a_PERp13	27	+5V	AD18
28	GND	a_PERn13	28	AD17	AD16
29	a_PETp14	GND	29	C/BE2#	GND
30	a_PETn14	GND	30	PCI_PRST#	FRAME#
31	GND	a_PERp14	31	IRDY#	TRDY#
32	GND	a_PERn14	32	DEVSEL#	+5V
33	a_PETp15	GND	33	LOCK#	STOP#
34	a_PETn15	GND	34	PERR#	GND
35	GND	a_PERp15	35	GND	C/BE1#
36	GND	a_PERn15	36	PAR	AD14
37	N.C	GND	37	N.C	GND
38	N.C	N.C	38	GND	AD12
39	GND	GND	39	AD15	AD10
40	GND	GND	40	AD13	GND
41	GND	GND	41	GND	AD09
42	GND	GND	42	AD11	C/BE0#
43	GND	GND	43	AD08	GND
44	+12V	+12V	44	GND	AD06
45	+12V	+12V	45	AD07	AD05
46	+12V	+12V	46	AD04	GND
47	+12V	+12V	47	GND	AD02
48	+12V	+12V	48	AD03	AD01

Mechanical Key					
49	+12V	+12V	49	AD00	GND

Note *Please contact your vendor to get the backplane design guide if it's required. The backplane design guide is NDA required.*

APPENDIX C CONFIGURING SATA FOR RAID FUNCTION

Configuring SATA Hard Drive(s) for RAID Function (Controller: Intel® ICH9M-E only)

Please follow up the steps below to configure SATA hard drive(s):

(1) Install SATA hard drive(s) in your system.
(2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.
(3) Configure RAID by the RAID BIOS.
(4) Create a floppy disk for the SATA controller driver.
(5) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:
(a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
(b) An empty formatted floppy disk
(c) Windows XP setup disk

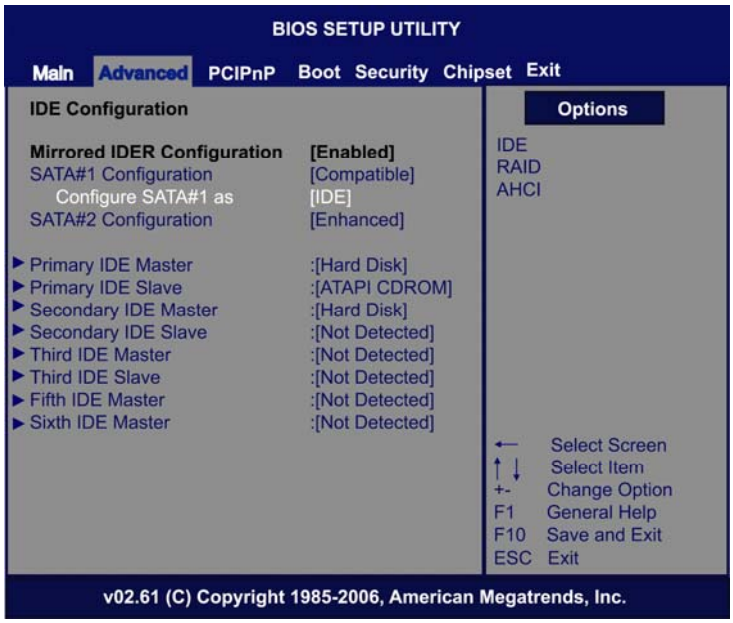
(1) Installing SATA hard drive(s) in your system

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

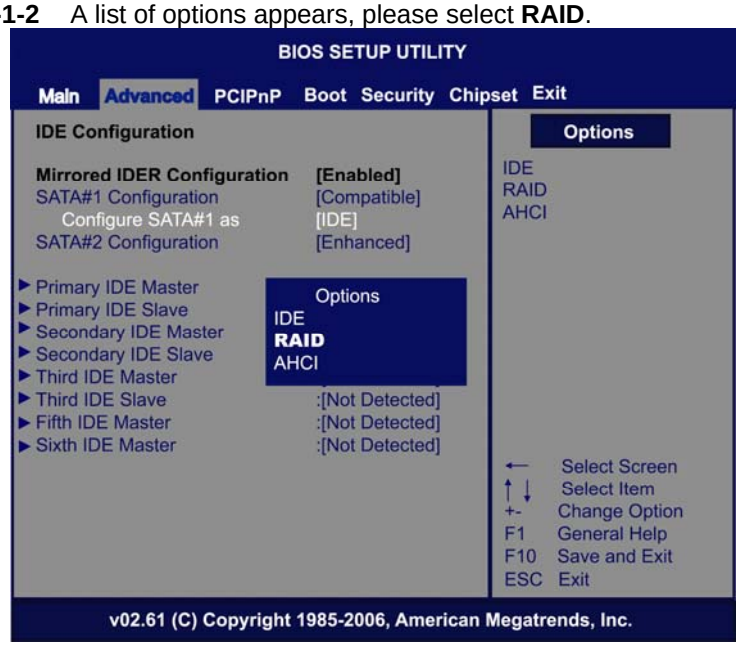
(2) Configuring SATA controller mode and boot sequence by the BIOS Setup

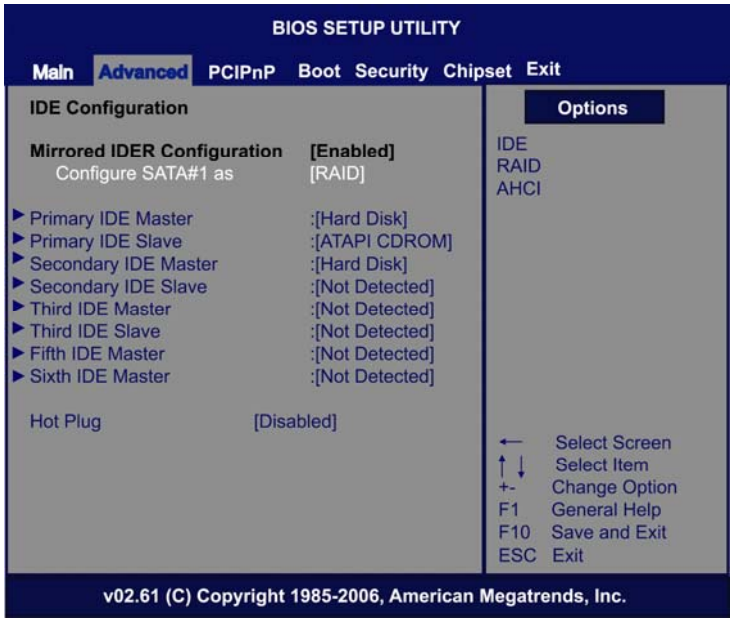
You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

(2)-1-1 Turn on your system, and then press the Del button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just go to the Advanced Settings menu/IDE configuration, select the **Configure SATA#1 as**, and press <Enter> for more options.

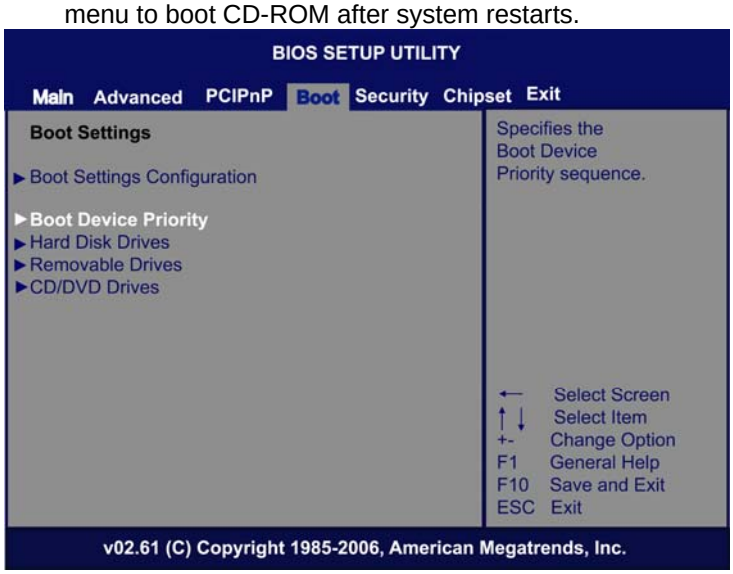


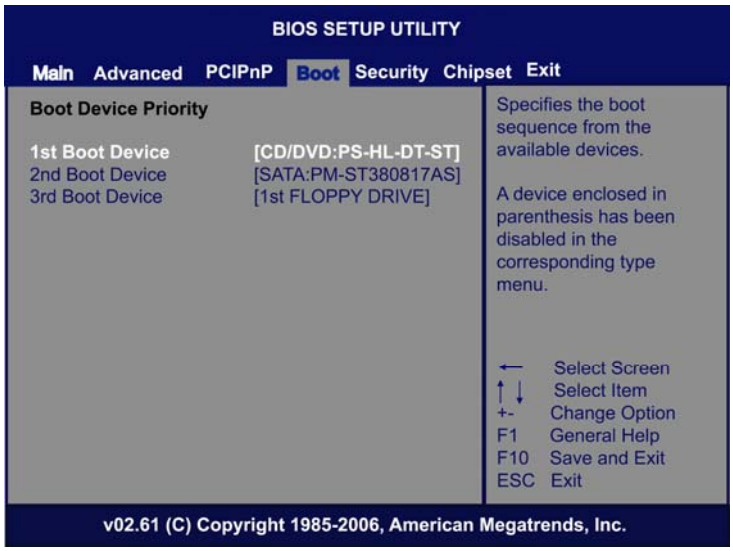
(2)-1-2 A list of options appears, please select **RAID**.





(2)-2 Set **CDROM** for **First Boot Device** under the **Boot Settings** menu to boot CD-ROM after system restarts.



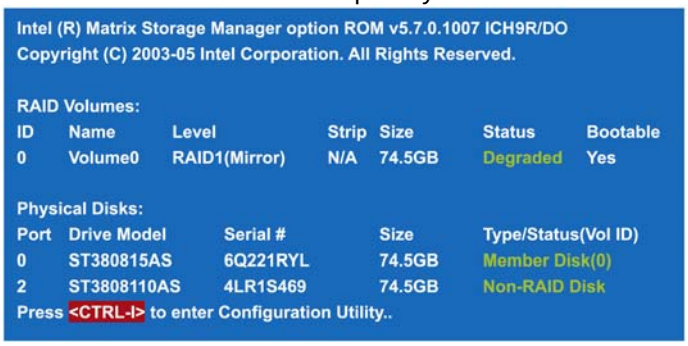

BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Boot Device Priority
1st Boot Device [CD/DVD:PS-HL-DT-ST]
2nd Boot Device [SATA:PM-ST380817AS]
3rd Boot Device [1st FLOPPY DRIVE]
Specifies the boot sequence from the available devices.
A device enclosed in parenthesis has been disabled in the corresponding type menu.
← Select Screen
↑ ↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C) Copyright 1985-2006, American Megatrends, Inc.

(2)-3 Save and exit the BIOS Setup.

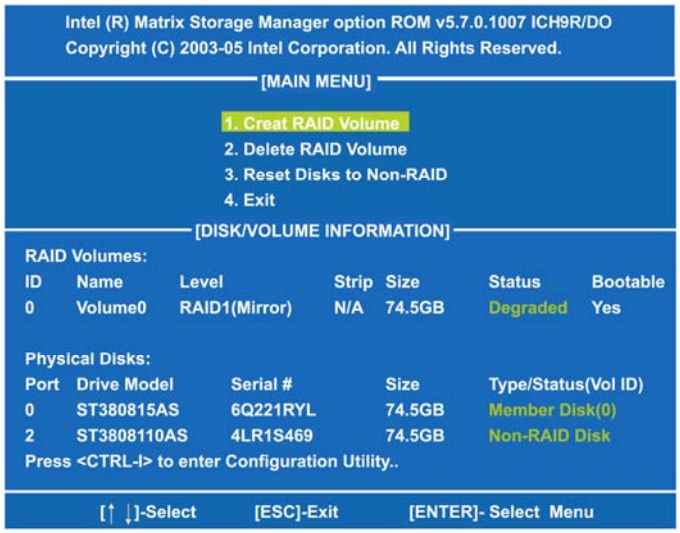
(3) Configuring RAID by the RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create a RAID.

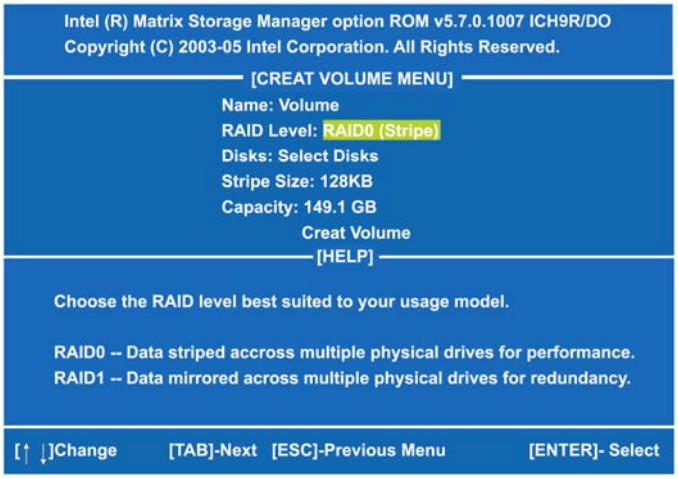
(3)-1 After the POST memory testing and before the operating system booting, a message "*Press <Ctrl-I> to enter Configuration Utility*" shows up, accordingly, press <CTRL+ I> to enter the RAID BIOS setup utility.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 74.5GB Degraded Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility..

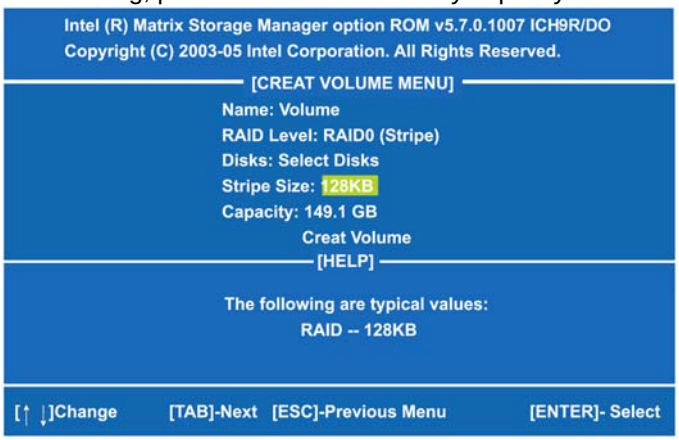
(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear. If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 74.5GB Degraded Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

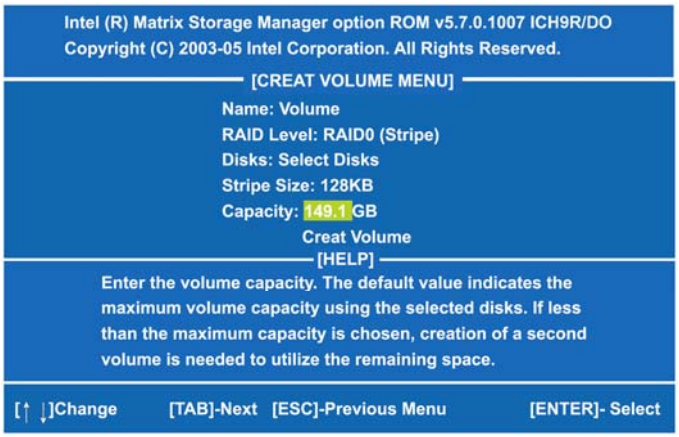
(3)-3 After entering the **CREATE VOLUME MENU** screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name". When finished, press ENTER to select a RAID level. There are three RAID levels, RAID0, RAID1 and RAID5 & RAID10. Select a RAID level and press ENTER.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
[HELP]
Choose the RAID level best suited to your usage model.
RAID0 -- Data striped accross multiple physical drives for performance.
RAID1 -- Data mirrored across multiple physical drives for redundancy.
[↑ ↓]Change
[TAB]-Next
[ESC]-Previous Menu
[ENTER]- Select

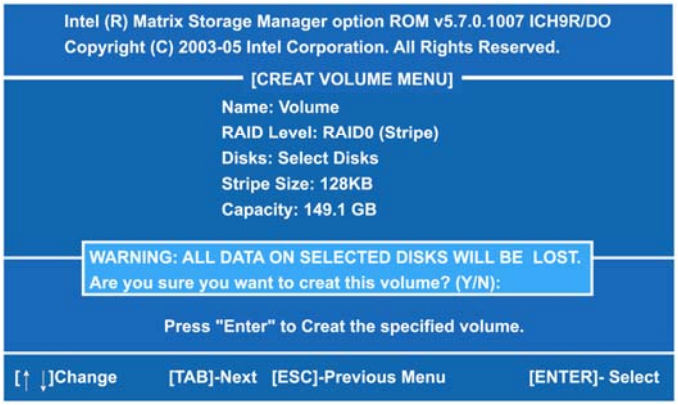
(3)-4 Set the stripe block size. The *KB* is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press ENTER for the array capacity.



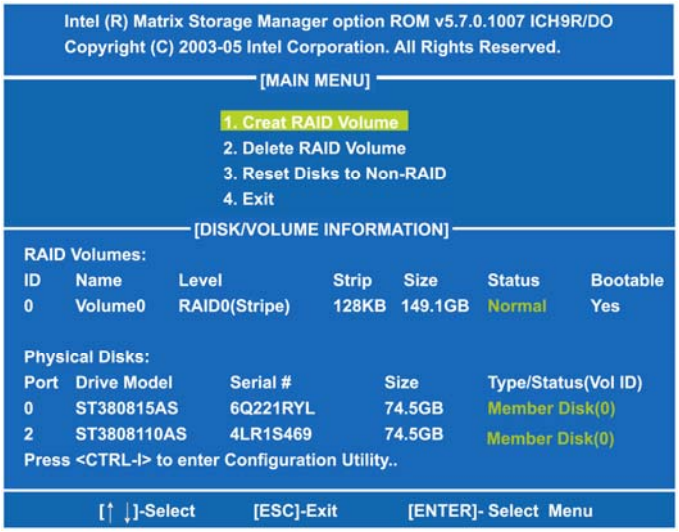
(3)-5 After setting all the items on the menu, select **Create Volume** and press ENTER to start creating the RAID array.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Creat Volume
[HELP]
Enter the volume capacity. The default value indicates the maximum volume capacity using the selected disks. If less than the maximum capacity is chosen, creation of a second volume is needed to utilize the remaining space.
[↑ ↓]Change
[TAB]-Next
[ESC]-Previous Menu
[ENTER]- Select

(3)-6 When prompting the confirmation, press "*Y*" to create this volume, or "*N*" to cancel the creation.

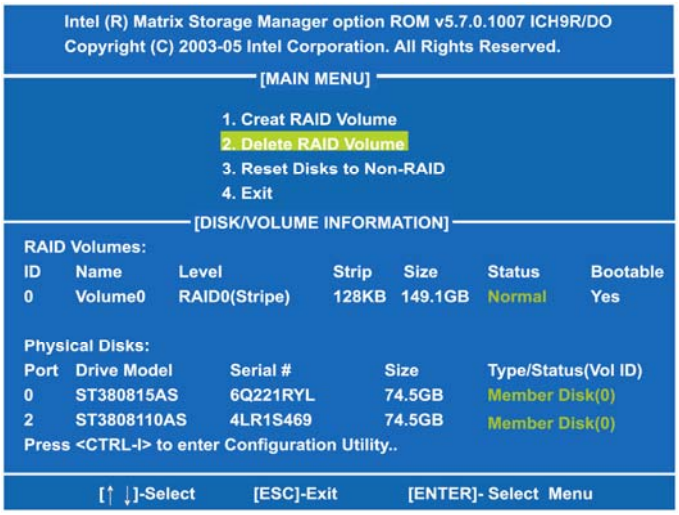

Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[CREAT VOLUME MENU]
Name: Volume
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to creat this volume? (Y/N):
Press "Enter" to Creat the specified volume.
[↑ ↓]Change
[TAB]-Next
[ESC]-Previous Menu
[ENTER]- Select

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 149.1GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Member Disk(0)
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.


Intel (R) Matrix Storage Manager option ROM v5.7.0.1007 ICH9R/DO
Copyright (C) 2003-05 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Creat RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 149.1GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380815AS 6Q221RYL 74.5GB Member Disk(0)
2 ST3808110AS 4LR1S469 74.5GB Member Disk(0)
Press <CTRL-I> to enter Configuration Utility..
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Please press [ESC] to exit the RAID BIOS utility.

Now, you can proceed to install a SATA driver controller and the operating system.

(4) Making a SATA Driver Disk

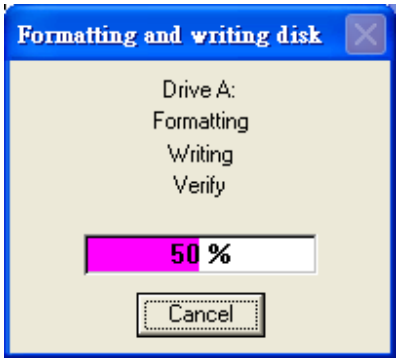
To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

(4)-1 Users can insert the Driver CD and the formatted blank floppy disk in another system. And then, please execute the f6flpy32.exe file in the folder of the Driver CD.

Note *Please execute the f6flpy64.exe file, if installing 64-bit Windows Operating System.*

(4)-2 When this screen pops out, please click the "**CONFIRM**" button.

(4)-3 When the RAID Driver is written to the floppy disk, the SATA driver disk is completed.

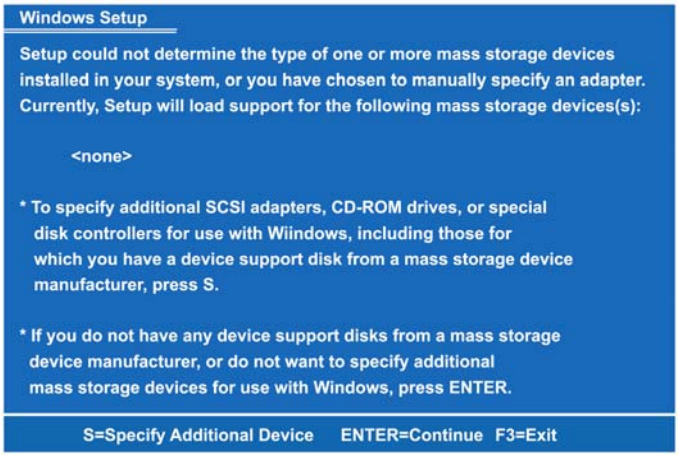


Note1 *Please execute all of file of the f6flpy64 folder, if installing 64-bit Windows Operating System.*

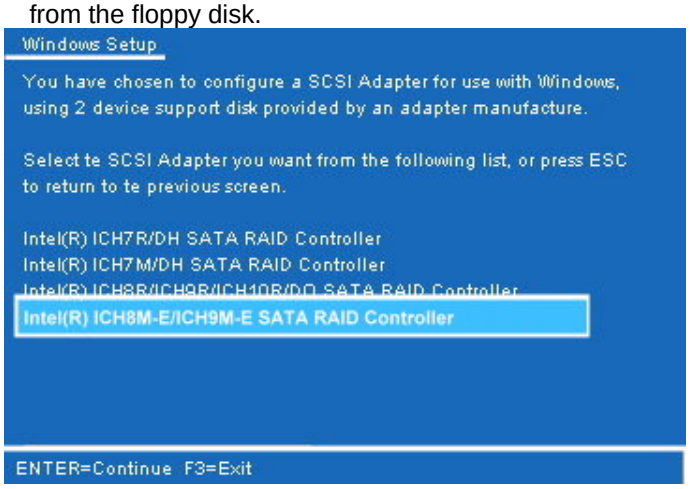
(5) Installing the SATA controller driver during the OS installation
Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows 2000/XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

(5)-1 Restart your system to boot the Windows 2000/XP Setup disk, and press F6 button as soon as you see the message "*Press F6 if you need to install a 3rd party SCSI or RAID driver*". After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.

(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "*S*".


Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device ENTER=Continue F3=Exit

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu will appear below. Use the ARROW keys to select **Intel(R) ICH8M-E/ICH9M-E SATA RAID Controller** and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.


Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows, using 2 device support disk provided by an adapter manufacture.
Select te SCSI Adapter you want from the following list, or press ESC to return to te previous screen.
Intel(R) ICH7R/DH SATA RAID Controller
Intel(R) ICH7M/DH SATA RAID Controller
Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller
Intel(R) ICH8M-E/ICH9M-E SATA RAID Controller
ENTER=Continue F3=Exit

Note *If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the*

correct SATA driver again from the driver CD.

MEMO